HandHeld PRODUCTS

IMAGETEAM™ 2020/5620

Cordless System

powered by Adaptus™ imaging technology

System Manual

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Statement of Agency Compliance

The IT2020-5B/IT5620 system meets or exceeds the requirements of all applicable standards organizations for safe operation. However, as with any electrical equipment, the best way to ensure safe operation is to operate them according to the agency guidelines that follow. Please read these guidelines carefully before using your IT2020-5B/IT5620 system.

Regulatory and Safety Approvals for the IT2020-5B/ IT5620

Parameter	Specification
USA	FCC Part 15, Class B
Canada	ICES-003
European Community	EN 55022 (CISPR 22) Class B
	EN60950
	EN60825-1
	EN55024:1998

FCC Class B Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

If necessary, the user should consult the dealer or an experienced radio/ television technician for additional suggestions. The user may find the following booklet helpful: “Something About Interference.” This is available at FCC local regional offices. Hand Held Products, Inc. is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Hand Held Products, Inc. The correction is the responsibility of the user. Use only shielded data cables with this system.

In accordance with FCC 15.21, changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. To maintain compliance with FCC RF exposure guidelines for body-worn operation, do not use accessories that contain metallic components and ensure that the device is at least 15mm (0.6 inches) from the body.

Canadian Compliance

This Class B digital apparatus compiles with Canadian ICES-003. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.
3. To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

CE Compliance

CE The CE mark on the product indicates that the system has been tested to and conforms with the provisions noted within the 89/336/EEC Electromagnetic Compatibility Directive and the 73/23/EEC Low Voltage Directive.

For CE-related inquiries, please contact:

Hand Held Products, Inc.
Nijverheidsweg 9
5627 BT Eindhoven
The Netherlands

Hand Held Products shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE marked and does not comply with the Low Voltage Directive.

Regulatory Approvals for Bluetooth Radio Devices

RF devices are designed to comply with the most current applicable standards on safe levels of RF energy developed by the Institute of Electrical and Electronics Engineers (IEEE) and the American National Standards Institute (ANSI) and have been recommended for adoption by the Federal Communications Commission (FCC).

Parameter	Specification
RF Approvals	
U.S.A.	FCC Part 15.247
Canada	RSS 210

Bluetooth Radio Device R&TTE Compliance Statement

These devices are in conformity with all essential requirements of the R&TTE Directive (1999/5/EC). This equipment has been assessed to the following standards:

Parameter	Specification
R&TTE	EN 300 328-2:2000
	EN 301 489-1 (2002-08)
	EN 301 489-17 (2002-08)
	EN 60950:2000
	EN 50361:2001

This product is marked with CE0682 in accordance with the product requirements specified in the R&TTE Directive, 1999/5/EC.

The equipment is intended for use throughout the European Community.

Bluetooth Qualified Product

Bluetooth Qualified Body approved as a Bluetooth Class II radio.

UL and cUL Statement

UL listed UL1950 and CSA 22.2 No.950. cUL listed UL1950 and CSA 22.2 No 950.

TÜV Statement

TÜV or GS marked to EN60950 and EN60825-1.

C-Tick Statement

Conforms to AS/NZS 3548. C-Tick number: N10410.

Mexico

NOM NYCE Certified

Patents

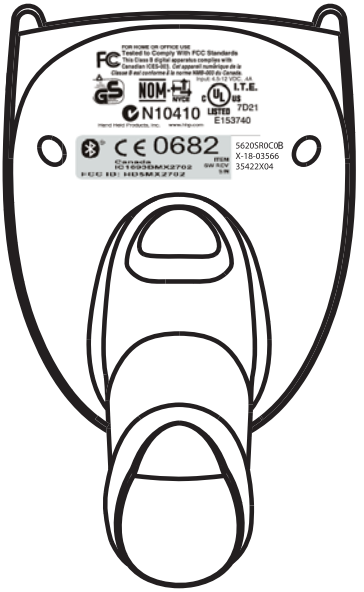
Please refer to the IT5620 packaging for patent information.

Solids and Water Protection

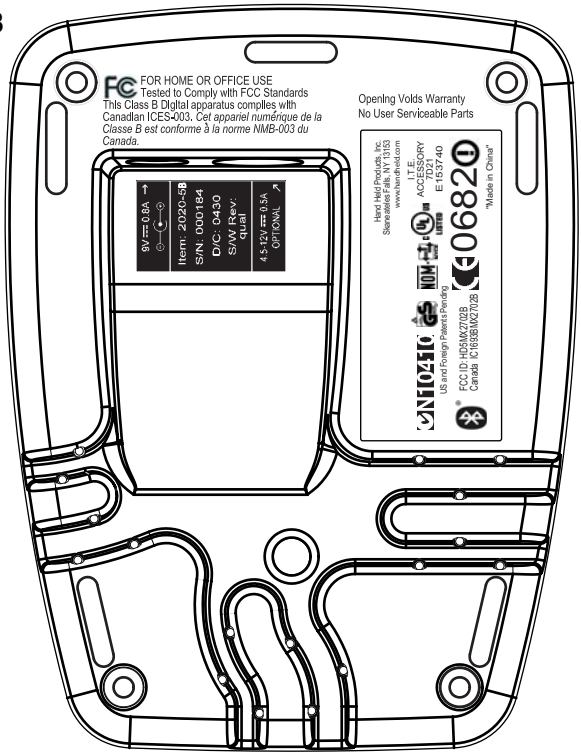
The IT5620 has a rating of IP41, immunity of foreign particles and dripping water.

Required Safety Labels

IT5620



IT2020-5B


FC FOR HOME OR OFFICE USE
Tested to Comply with FCC Standards
This Class B Digital apparatus complies with Canadian ICES-003. Cet appariel numérique de la Classe B est conforme à la norme NMB-003 du Canada.
Opening Voids Warranty
No User Serviceable Parts
9V 0.8A
Item: 2020-5B
S/N: 000184
D/C: 0430
S/W Rev: qual
4.5-12V 0.5A OPTIONAL
Hand Held Products, Inc.
Skaneateles Falls, NY 13153
www.handheld.com
ACCESSORY
7D21
E 153740
06820
"Made in China"
US and Foreign Patents Pending
FCC ID: HD5IMX7702B
Canada: IC:1693BIMX7702B

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1 Getting Started

The IMAGETEAM 5620 cordless scanning system consists of one IT2020-5B base and one IT5620 Cordless Linear Scanner. Up to seven scanners may be linked to one base. The IT5620 marks a new performance level for hand held scanners. The IT5620 is powered by Hand Held Products Adaptus™ Imaging Technology. The performance of Adaptus technology delivers aggressive read rates and depths of field on 1D codes.

Designed for today's demanding retail and commercial environments, the IT5620 offers a superior reading range, durability, and the ability to read poor quality bar codes. Linear imaging technology is defined by a bright and sharply focused aiming line, high resolution imaging, and fast reading speed. The IT5620 is comfortable to hold, easy to use, rugged, and excellent for retail applications, as well as for all general scanning applications.

The cordless system is an economical, durable solution for a wide variety of portable data collection applications. The cordless system features:

- a tough, ergonomic thermoplastic housing for comfort and durability.
- an advanced two-way spread-spectrum radio, Bluetooth® wireless technology
- a wide range of interfaces: keyboard wedge, wand emulation, RS-232 terminals, USB, and legacy decoders.
- visible and audible feedback for confirmation of a successful decode.
- a rechargeable battery designed to operate through a whole work day.

The cordless system can be programmed for many communication parameters and input/output protocols compatible to the host, as well as advanced data editing and formatting.

About This Manual

This manual contains information to help you set up, operate, and program the cordless system. Product specifications, connector pinouts, a troubleshooting guide, and customer support information are also provided.

Hand Held Products bar code scanners are factory programmed for the most common terminal and communications settings. If you need to change these settings, programming is accomplished by scanning the bar codes in this guide.

An asterisk (*) next to an option indicates the default setting.

This section contains the following information:

- Unpacking the System
- Cordless System Main Components
- Battery and Charging Information
- Linking the Scanner to the Base
- Beeper and LED Sequences and Their Meaning
- Basic Operation of the Cordless System
- Communication Between the Cordless System and the Host

- Connection of the Base to an Interface

Unpacking the System

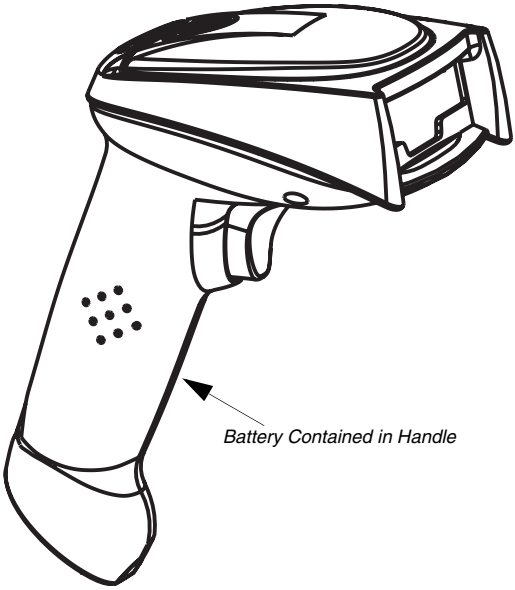
After you open the shipping carton containing the product, take the following steps:

- Check to make sure everything you ordered is present.
- Save the shipping container for later storage or shipping.
- Check for damage during shipment. Report damage immediately to the carrier who delivered the carton.

Models

Models	Description
IT2020-5B	Base: Keyboard wedge, TTL level 232, TTL level 232 serial wedge, IBM 4683, wand emulation, USB keyboard, USB HID, USB retail (IBM SurePOS)
5620SR0C0B	Cordless Linear Scanner

Cordless System: Main Components



About the Battery

Use only the Li-ion battery packs provided by Hand Held Products. The use of any battery pack not sold by Hand Held Products will void your warranty and may result in damage to your unit.

Power is supplied to the cordless scanner by a rechargeable battery that is integrated in the scanner handle. Each scanner is shipped with a battery. *(See Product Specifications* beginning on page 11-1.*)*

Charging Information

The battery is designed to charge while the scanner is positioned in the cordless base unit. Refer to "IT2020-5B LED Sequences and Their Meaning" on page 1-15 for an interpretation of the Charge Status indicators.

- Place the scanner in the base that is connected to an appropriate power supply.

Battery Recommendations

- Batteries are shipped approximately 30% to 60% charged and should be fully charged for maximum charge capacity.
- The battery is a lithium ion cell and can be used without a full charge, as well as can be charged without fully discharging, without impacting the battery life. There is no need to perform any charge/discharge conditioning on this cell type battery.
- Do not disassemble the battery. There are no user-serviceable parts in the battery.
- Keep the base connected to power when the host is not in use.
- Replace a defective battery immediately since it could damage the IT5620.
- Don't short-circuit a battery or throw it into a fire. It can explode and cause severe personal injury.
- Although your battery can be recharged many times, it will eventually be depleted. Replace it after the battery is unable to hold an adequate charge.
- If you are not sure if the battery or charger is working properly, send it to Hand Held Products or an authorized Hand Held Products service center for inspection.

Proper Disposal of the Battery

When the battery has reached the end of its useful life, the battery should be disposed of by a qualified recycler or hazardous materials handler. Do not incinerate the battery or dispose of the battery with general waste materials. You may send batteries to Hand Held Products (postage paid). The shipper is responsible for complying with all federal, state, and local laws and regulations related to the packing, labeling, manifesting, and shipping of spent batteries. Contact the Product Service Department (see 13-1) for recycling or disposal information. Since you may find that your cost of returning the batteries significant, it may be more cost effective to locate a local recycle/disposal company.

Base Charge Mode

In order for the battery to be charged, there must be enough voltage for the circuitry to work. There are three conditions during which power can be supplied to the base:

Condition 1: 9VDC power supply connected to the barrel connector
Condition 2: 12VDC host power source only
Condition 3: 5VDC host power source only

The chart below describes each selection by condition.

	Condition 1	**Condition 2**	**Condition 3**
Automatic	Fast Charge	Slow Charge	No Charge
Full Charge Rate	Fast Charge	Fast Charge	No Charge
Low Charge Rate	Slow Charge	Slow Charge	No Charge
Battery Charge Off	No Charge	No Charge	No Charge

Using a slow charge rate draws less current (power) from the input power source when the battery is mostly discharged.

Scan the appropriate bar code for your application. *Default = Automatic*.

* Automatic

Full Charge Rate

Low Charge Rate

Battery Charge Off

Linking Scanner to Base

When newly shipped or defaulted to factory settings, the base and scanner are not linked. Once the scanner is placed into the base, the software automatically links the scanner and the base. If the scanner and base have previously been linked, you do not receive any feedback. If this is the first time that the scanner and base are linked, both devices emit a short chirp when their radios link. At this point, you are set to one scanner to one base.

1. Provide power to the base.
2. Place the IT5620 into the base. The scanner and base link.
3. To determine if your cordless system is set up correctly, scan one of the sample bar codes in the back of this manual. If the scanner provides a single good read beep and the green LED lights, the scanner has successfully linked to the base. If you receive a triple error beep and the red LED lights, the scanner has not linked to the base.

Scanner Modes

The IT5620 is capable of working in single scanner mode, multiple scanner mode, or with Blutetooth devices, other than the IT2020-5B base.

Unlinking the Scanner

If the base has a scanner linked to it, that scanner must be unlinked before a new scanner can be linked. Once the previous scanner is unlinked, it will no longer communicate with the base. To unlink a scanner from the base, scan the Unlink Scanner bar code below.

Unlink Scanner

Single Scanner Operation

There are two link modes to accommodate different applications: Locked Link Mode and Open Link Mode. Scan the appropriate bar codes included in the Open Link and Locked Link Mode explanations that follow to switch from one mode to another. *Default = Locked Link Mode.*

Locked Link Mode - Single Scanner

If you link a scanner to a base using the Locked Link Mode, other scanners are blocked from being linked if they are inadvertently placed into the base. If you do place a different scanner into the base, it will charge the scanner, but the scanner will not be linked.

* Locked Link Mode
(Single Scanner)

To use a different scanner, you need to unlink the original scanner by scanning the Unlink Scanner bar code. (See "Scanner Modes" on page 1-6.)

Open Link Mode - Single Scanner

When newly shipped or defaulted to factory settings, the base and scanner are not linked. By placing a scanner into the base, they establish a link. Placing a different scanner into the base establishes a new link and the old scanner is unlinked. Each time a scanner is placed into the base, it becomes the linked scanner; the old scanner is unlinked.

Open Link Mode
(Single Scanner)

Override Locked Scanner

If you need to replace a broken or lost scanner that is linked to a base, scan the Override Locked Scanner bar code below with a new scanner and place that scanner in the base. The locked link will be overridden; the broken or lost scanner's link with the base will be removed, and the new scanner will be linked.

Override Locked Scanner
(Single Scanner)

Multiple Scanner Operation

To put the scanner in multiple scanner mode, scan the bar code below. Once you scan this bar code, the scanner is unlinked from the base and must be placed into the base to re-link.

Multiple Scanner Operation

Note: Multiple Scanner Operation Mode allows you to link up to 7 scanners to one base. You cannot join an eighth scanner until you unlink one of the 7 scanners or take a scanner out of range.

Scanner Name

You are able to assign a name to each scanner you are using. It will be helpful to name the scanners if you have multiple scanners linked to one base so that you will be able to control the scanner receiving imaging commands sent from the base. The default name for an IT5620 is “IT5620”. If you have more than one IT5620 linked to a base, the first scanner that is linked to the base receives commands addressed using this name.

Changing Scanner Name - Serially

If you wish to change the name, you may change it via a serial command (refer to "Menu Command Syntax" on page 10-1) or via a bar code command. To change the name serially, unlink all except one of the IT5620s from the base. Send “:IT5620:BT_NAM*name*.”, where *name* is the new scanner name. If you wish to change the name of additional IT5620s, re-link them one at a time and repeat the “:IT5620:BT_NAM*name*.” command for each scanner.

Changing Scanner Name - via Bar Codes

If you wanted set up your scanners with names 0001-0007, you may scan the bar codes below. Scan the Reset bar code after each name change and wait for the scanner to re-link to the base before scanning the next bar code to name the next scanner.

0001

0002

0003

0004

0005

0006

0007

Reset

Alternatively, you may change the name with a bar code command if you cannot send serial commands to the base. One way to do this is to scan the bar code below and scan a number for the scanner name. For example, if you had 7 scanners to one base, scan the bar code below with the first scanner, scan the **1** bar code on the Programming Chart inside the back cover of this manual and scan **Save**. Then scan the **Reset** bar code and wait for the scanner to re-link to the base before scanning the next bar code. Repeat that process for scanner number 2 , 3, 4 etc.

Scanner Name

If you want to assign an alphabetic name to the scanner, create a Code 128 bar code containing "~BT_NAM*name*." followed by a FNC3 character (hexidecimal 83), where *name* is the new scanner name. Scan the Reset bar code (page 1-9 or on the Programming Chart inside the back cover of this manual). You may use Barcode Builder, which is included with Quick*View. You may download Quick*View from the Hand Held Products website: www.handheld.com.

Scanner Report

Scan the bar code below to generate a report for the connected scanners. The report indicates the port, work group, scanner name, and address.

Scanner Report

Application Work Groups

Your cordless system can have up to seven scanners linked to one base. You can also have up to seven work groups. If you want to have all of the scanners' settings programmed alike, you don't need to use more than one work group. If you want each scanner to have unique settings (e.g., beeper volume, prefix/suffix, data formatter), then you may program each scanner to its own unique work group and may program each scanner independently. Visual Menu 2003 (page 9-1) makes it easy for you to program your system for use with multiple scanners and multiple work groups.

The scanner keeps a copy of the menu settings it is using. Whenever the scanner is connected or reconnected to a base, the scanner is updated with the latest settings from the base for its work group. The scanner also receives menu setting changes processed by the base. If a scanner is removed from one base and placed into another base, it will be updated with the new base settings for whatever work group that the scanner was previously assigned. For example, if the scanner was in work group 1 linked to the first base, it will be placed in work group 1 in the second base with the associated settings.

Application Work Group Selection

This programming selection allows you to assign a scanner to a work group by scanning the bar code below. You may then program the settings (e.g., beeper volume, prefix/suffix, data formatter) that your application requires.

* Group 0

Group 1

Group 2

Group 3

Group 4

Group 5

Group 6

Resetting the Standard Product Default Settings: Current Application Work Group

If you aren't sure what programming options are in your scanner, or you've changed some options and want the standard product default settings restored, scan the ***Standard Product Default Settings: Current Application Group*** bar code below.

The Menu Commands starting on page 10-6 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Note: Scanning this bar code also causes both the scanner and the base to perform a reset and become unlinked. Refer to "Linking Scanner to Base" on page 1-6 for additional information.

Standard Product Default Settings:
Current Application Group

*Note: If your scanner is in multiple scanner mode and you scan either the current or all application group default bar code, you will hear up to 30 seconds of beeping while all scanners are re-linked from the base and the settings are defaulted to * settings. The default interface is keyboard wedge and the default scanner mode is single scanner locked link mode.*

Resetting the Standard Product Default Settings: All Application Work Groups

The following bar code defaults all of the work groups to the factory settings.

Standard Product Default Settings:
All Application Groups

The Menu Commands starting on page 10-6 list the standard product default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Using the Scanner with Bluetooth Devices

The IT5620 scanner may be used either with the IT2020-5B base or with other Bluetooth devices. Scanning the Non-Base Bluetooth Connection bar code below allows the scanner to be used with other Bluetooth devices (e.g., PDA, PC - Bluetooth USB Adapter). After you scan the bar code below, follow the instructions supplied with your Bluetooth device to locate the scanner and connect to it. If you go out of range with your scanner, the scanner automatically reconnects to the Bluetooth device. If you want to relink to the IT2020-5B base, refer to *"Single Scanner Operation"* on page 1-7 or *"Multiple Scanner Operation"* on page 1-8.

Note: The multiple work groups option is not available when you are using the imager with Bluetooth devices other than the IT2020-5B base.

Non-Base BT Connection

Changing Bluetooth PIN Code

Some devices require a PIN code as part of the Bluetooth security features. Your scanner's default PIN is 1234, which you may need to enter the first time you connect to your PDA or PC. The PIN code must be between 1 and 16 characters. To change the PIN, scan the bar code below and then scan the appropriate numeric bar codes from the Programming Chart inside the back cover of this manual. Scan **Save** to save your selection.

Bluetooth PIN

Out-of-Range Alarm

Duration

If your scanner is out range of the base, an alarm sounds from both your base and scanner. To activate the alarm options for the scanner or the base and to set the alarm duration, scan the appropriate bar code below and then set the time-out duration (from 0-3000 seconds) by scanning digits on the Programming Chart inside the back cover, then scanning **Save**. *Default = 0 sec (no alarm).*

Base Alarm Duration

Scanner Alarm Duration

Note: If you are out of range when you scan a bar code, you will receive an error beep even if you do not have the alarm set. You receive the error beep since the data could not be communicated to the base or the host.

Alarm Sound Type

If you have set the out-of-range alarm enabled, you may change the alarm type for the scanner or base by scanning the appropriate bar code below and then scanning a digit (0-7) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = 0.* Set the sound type to fit your application.

Base Alarm Type

Scanner Alarm Type

Data Accumulation Mode

Scan the bar codes below to turn data accumulation (batch) mode on and off. If data accumulation mode is on, bar code data is stored when the scanner is out of range of the base and transmitted once the scanner is back in range.

Data Accumulation Mode On

* Data Accumulation Mode Off

Beeper and LED Sequences and Their Meaning

The IT5620 contains LEDs on the top of the unit to indicate its power up, communication, and battery status. Simply stated, red LED = error; green LED = success of any type. The unit's audible indicators have meaning as well: 3 beeps = error; 2 beeps = menu change; 1 beep = all other successes.

The table below lists the indication and cause of the LED illumination and beeps for the IT5620.

IT5620 LED Sequences and Their Meaning

LED Indication	Beeper Indication	Cause
Normal Operation		
Red Flash	None	Battery low
Green Flash	1 beep	Successful communication or linking
Red, blinking	3 beeps	Failed communication
Menu Operation		
Green Flash	2 beeps	Successful menu change
Red, blinking	3 beeps	Unsuccessful menu change

IT2020-5B LED Sequences and Their Meaning

The base contains a red LED that indicates the status of the unit and verifies its communication with the host system and a green LED that indicates scanner battery charge condition.

The tables below list the indication and cause of the LED illumination and beeps for the IT2020-5B.

System Condition	System Status Indicator (Red LED)
Power On/System Idle	LED is on
Power On/Diagnostic Error	Blink LED for long duration, pulsing indefinitely
Receiving Data (IT2020-5B only)	Blink LED for short duration in multiple pulses. Occurs while transferring data to/from the RF module or the Host port.
Base requests status from its own Bluetooth radio	Blink LED once (occurs approx. every 30 seconds)

Note: Charging only occurs with external power applied to the IT2020-5B or 12 volt Host power.

Charge Condition	Charge Status Indicator (Green LED)
Scanner inserted into base	Three flashes
>80% charged	On continuously
30% to 80% charged	Slow flash, 1 second on, 1 second off
<30% charged	Fast flash, 300 mSec on, 300 mSec off

Basic Operation of the Cordless System

Cordless Base

The cordless base provides the link between the cordless scanner and the host system. The base contains an interface assembly and an RF communication module. The RF communication module performs the data exchange between the cordless scanner and the interface assembly. The control assembly coordinates the central interface activities including: transmitting/receiving commands and data to/from the host system, performing software activities (parameter menuing, visual indicator support, power-on diagnostics), and data translation required for the host system.

The base also is the scanner battery charger with the external 9VDC power source applied. Once you place the scanner into base, the base green LED responds according to the Charge Status Indicator table above.

The base can be powered by the Host (parasitic power mode). If the base is in parasitic power mode without the 9VDC power source, the base will still function, but will not charge the battery.

RF (Radio Frequency) Module Operation

The cordless system uses a state-of-the-art two-way Bluetooth radio to transmit and receive data between the scanner and the base. Designed for point-to-point and multipoint-to-single point applications, the radio operates using a license free ISM band, which sends relatively small data packets at a fast data rate over a radio signal with randomly changing frequencies, makes the cordless system highly responsive to a wide variety of data collection applications and resistant to noisy RF environments. Bluetooth Class 2 power level provides range of 33 feet (10m) depending on the environment.

Cordless Scanner

The cordless scanner enables fast and accurate bar code scanning using a non-contact linear scanner.

The scanner is comprised of a linear scanner, a decode/control assembly, and an RF communication module. The scan engine performs the bar code image illumination and sensing. The decode/control assembly coordinates the central communication activities including: capturing and decoding the bar code image data, performing software activities (parameter menuing, visual indicator support, low battery indication), and data translation required for the host system. The RF communication module performs the data exchange between the scanner and the base.

System Conditions

The components of the cordless system interact in specific ways as you associate a scanner to a base, as you move a scanner out of range, bring a scanner back in range, or swap scanners between two cordless systems. The following information explains the cordless system operating conditions.

Linking Process

Once a scanner is placed into the base, the scanner's battery charge status is checked, and software automatically detects the scanner and links it to the base depending on the selected link mode.

Scanner Is Out of Range

The cordless scanner is in communication with its base, even when it is not transmitting bar code data. Whenever the scanner can't communicate with the base for a few seconds, it is out of range. If the scanner is out of range and you scan a bar code, the scanner issues a triple beep indicating no communication with the base. In addition, your scanner and base can sound an alarm if programmed to emit an alarm. See Out-of-Range Alarm on page 1-13.

Scanner Is Moved Back Into Range

The scanner re-links if the scanner or the base have been reset or out of range. If the scanner re-links, you will hear a single chirp when the re-linking process (uploading of the parameter table) is complete.

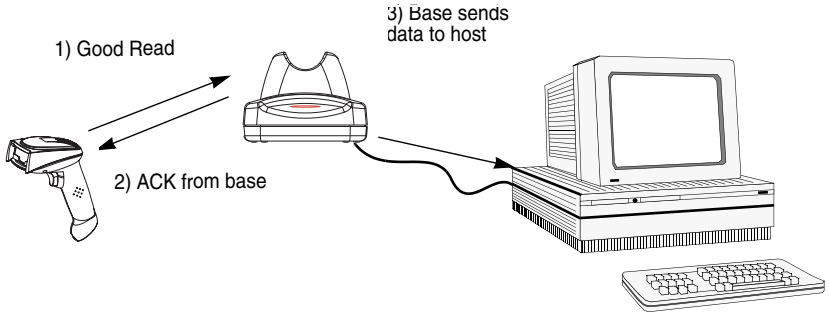
Out of Range and Back into Range with Data Accumulation Mode On

The scanner may store a number of symbols (approximately 500 UPC symbols, others may vary) when out of range and then send them to the base when back in range. You will not hear a communication error beep in this mode, but you will hear a short buzz when you pull the trigger if the radio communication is not working. Once the radio connection is made, the scanner produces a series of beeps while the data is being transferred to the base.

Communication Between the Cordless System and the Host

The cordless scanner provides immediate feedback in the form of a “good read” indication (a green LED on the scanner and an audible beep) after a bar code is scanned correctly and the base has acknowledged receiving the data. This is possible since the cordless system provides two-way communication between the scanner and the base.

When data is scanned, the data is sent to the host system via the base unit. Confirmation from the host system or the base indicates that the data sent was received by the host. The cordless scanner recognizes data acknowledgement (ACK) from the base unit. If it cannot be determined that the data has been properly sent to the base, the scanner issues an error indication. You must then check to see if the scanned data was received by the host system.

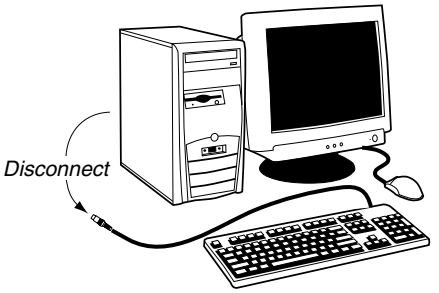


Connecting the Base When Powered by Host (Keyboard Wedge)

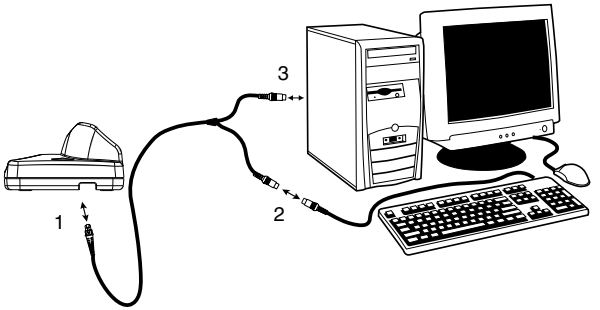
A base can be connected between the keyboard and PC as a “keyboard wedge,” plugged into the serial port, or connected to a portable data terminal in wand emulation or non decoded output mode. The following is an example of a keyboard wedge connection:

1. Turn off power to the terminal/computer.

2. Disconnect the keyboard cable from the back of the terminal/ computer.



3. Connect the appropriate interface cable to the base and to the terminal/ computer and keyboard.
4. Turn the terminal/ computer power back on.

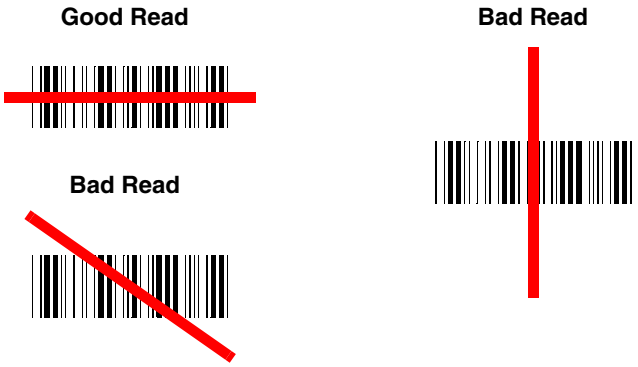


5. Program the base for the keyboard wedge interface. See "Keyboard Wedge Connection" on page 1-21.)
6. Verify the base operation by scanning a bar code from the Sample Symbols in the back of this manual.

Note: Without using the 9-volt external, power supply, the base only uses enough power from the host to operate the interface. The scanner's battery is not charged when in this mode. Using the 9-volt, external power supply allows the scanner's battery to be charged, and no power is drawn from the host.

Reading Techniques

The scanner has a view finder that projects a bright red aiming beam that corresponds to its horizontal field of view. The aiming line should be centered horizontally over the bar code; it will not read if the aiming line is in any other direction.



The best focus point for reading most code densities is about 5 inches (12.7 cm) from the unit. To read single or multiple symbols (on a page or on an object), hold the scanner at an appropriate distance from the target, pull the trigger, and center the aiming line on the symbol.

Resetting the Standard Product Defaults

If you aren't sure what programming options are in your scanner, or you've changed some options and want the factory settings restored, scan the ***Standard Product Default Settings*** bar code below.

The Menu Commands starting on page 10-6 lists the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Note: Scanning this bar code also causes both the scanner and the base to perform a reset and become unlinked. Refer to "Linking Scanner to Base" on page 1-6 for additional information.

Standard Product Default Settings

Plug and Play

Plug and Play bar codes provide instant scanner set up for commonly used interfaces.

Note: After you scan one of the codes, power cycle the host terminal to have the interface in effect.

Keyboard Wedge Connection

If you want your system programmed for an IBM PC AT and compatibles keyboard wedge interface with a USA keyboard, scan the bar code below. Keyboard wedge is the default interface.

Note: The following bar code also programs a carriage return (CR) suffix.

IBM PC AT and Compatibles
with CR suffix

Laptop Direct Connect

For most laptops, scanning the **Laptop Direct Connect** bar code allows operation of the scanner in parallel with the integral keyboard. The following Laptop Direct Connect bar code selects terminal ID 03, programs a carriage return (CR) suffix and turns on Emulate External Keyboard (page 2-5).

Laptop Direct Connect
with CR suffix

RS-232

The **RS-232** Interface bar code is used when connecting to the serial port of a PC or terminal. The following RS-232 Interface bar code also programs a carriage return (CR) and a line feed (LF) suffix, baud rate, and data format as indicated below. It also changes the trigger mode to manual.

Option	**Setting**
Baud Rate	115,200 bps
Data Format	8 data bits, no parity bit, 1 stop bit

RS-232 Interface

Wand Emulation Plug & Play

In Wand Emulation mode, the scanner decodes the bar code then sends data in the same format as a wand scanner. The Code 39 Format converts all symbologies to Code 39.

The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39.

The ***Wand Emulation Plug & Play Code 39 Format*** bar code below sets the terminal ID to 61. The ***Wand Emulation Plug & Play Same Code Format*** bar code sets the terminal ID to 64. These Plug & Play bar codes also set the Transmission Rate to 25 inches per second, Output Polarity to black high, and Idle State to high. (If you want to change the terminal ID *only*, without changing any other scanner settings, please refer to Terminal ID on page 2-1.)

Wand Emulation (Code 39 Format)

Wand Emulation Same Code

IBM 4683 Ports 5B, 9B, and 17 Interface

Scan one of the following “Plug and Play” codes to program the IT5620 for IBM 4683 Port 5B, 9B, or 17.

Note: After scanning one of these codes, you must power cycle the cash register.

IBM 4683 Port 5B Interface

IBM 4683 Port 9B HHBCR-1 Interface

IBM 4683 Port 9B HHBCR-2 Interface

IBM 4683 Port 17 Interface

Each bar code above also programs the following suffixes for each symbology:

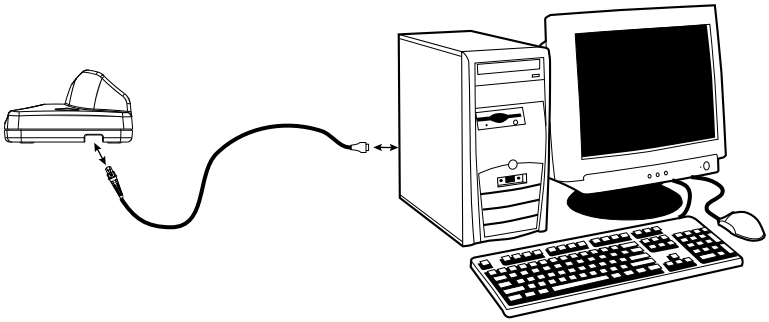
Symbology	**Suffix**
EAN 8	0C
EAN 13	16
UPC A	0D
UPC E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128 *	00 0A 0B
Code 128 **	00 18 0B

* Suffixes programmed for Code 128 with IBM 4683 Port 5B, IBM 4683 Port 9B HHBCR-1, and IBM 4683 Port 17 Interfaces
**Suffixes programmed for Code 128 with IBM 4683 Port 9 HHBCR-2 Interface

Connecting the Base with USB

A base can be connected to the USB port of a computer.

1. Connect the appropriate interface cable to the base and to the computer.



2. Program the base for the USB interface by scanning the appropriate programming bar code.

3. Verify the base operation by scanning a bar code from the Sample Symbols in the back of this manual.

For additional USB programming and technical information, refer to Hand Held Products "USB Application Note," available at www.handheld.com.

Note: Without using the 9-volt external, power supply, the base only uses enough power from the host to operate the interface. The scanner's battery is not charged when in this mode. Using the 9-volt, external power supply allows the scanner's battery to be charged, and no power is drawn from the host.

IBM SurePos

Scan one of the following “Plug and Play” codes to program the IT5620 for IBM SurePos (USB Hand Held scanner) or IBM SurePos (USB Tabletop scanner).

Note: After scanning one of these codes, you must power cycle the cash register.

IBM SurePos (USB Hand Held Scanner) Interface

IBM SurePos (USB Tabletop Scanner) Interface

Each bar code above also programs the following suffixes for each symbology:

Symbology	**Suffix**
EAN 8	0C
EAN 13	16
UPC A	0D
UPC E	0A
Code 39	00 0A 0B
Interleaved 2 of 5	00 0D 0B
Code 128	00 18 0B

USB PC or Macintosh Keyboard

Scan one of the following codes to program the IT5620 for USB PC Keyboard or USB Macintosh Keyboard. Scanning these codes adds a CR and LF, along with selecting the terminal ID (USB PC Keyboard - 124, USB Macintosh Keyboard - 125).

USB Keyboard (PC)

USB Keyboard (Mac)

USB HID

Scan the following code to program the IT5620 for USB HID bar code scanners. Scanning this code changes the terminal ID to 131.

USB HID Bar Code Scanner

USB Com Port Emulation

Scan the following code to program the IT5620 to emulate a regular RS-232-based Com Port. If you are using a Microsoft® Windows® PC, you will need to download a driver from the Hand Held Products website (www.handheld.com). The driver will use the next available Com Port number. Apple® Macintosh computers recognize the scanner as a USB CDC class device and automatically uses a class driver. Scanning the code below changes the terminal ID to 130.

USB Com Port Emulation

Note: No extra configuration (e.g., baud rate) is necessary.

CTS/RTS Emulation

USB CTS/RTS Emulation On

* USB CTS/RTS Emulation Off

ACK/NAK Mode

ACK/NAK On

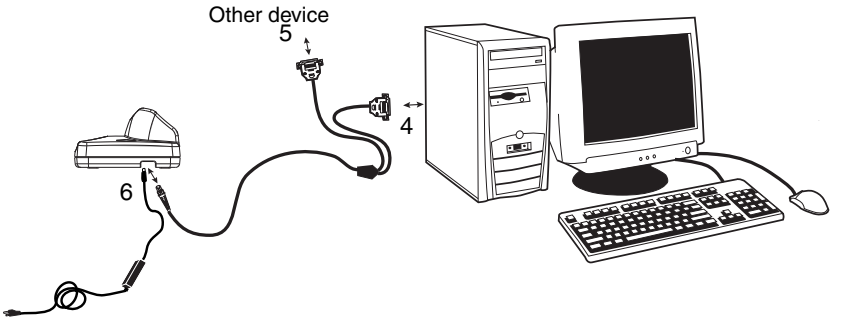
* ACK/NAK Off

Connecting the Base with Serial Wedge

The IT2020-5B uses TTL signal levels to wedge into an RS-232 serial network. Use only IT2020-5B serial wedge cables to prevent damage to the base. Refer to Connecting the Base with RS-232 Serial Port on page 2-7 to set the baud rate and communications protocol.

1. Turn off power to the computer.
2. Disconnect the existing serial cable from the computer.
3. Connect the appropriate interface cable to the base.

Note: For the base to work properly, you must have the correct cable for your type of computer.



4. Plug the serial connector into the serial port on your computer. Tighten the two screws to secure the connector to the port.
5. Plug the other serial connector into the other device connection and tighten the two screws.
6. Plug the power supply barrel connector to the base, and plug the power supply into the AC source.
7. Once the base has been fully connected, power up the computer.

To set up the serial wedge terminal ID, use the serial terminal ID 050 and follow the instructions on page 2-1. Make sure that all of the communication parameters match on all of the connected devices. Choosing Both sends scanned data to P1 and P2. Default = P1.

* P1

P2

Both P1 and P2

2 Terminal Interfaces

Terminal ID

If your interface is not a standard PC AT, refer to "Supported Terminals" on page 2-2 through page 2-3, and locate the Terminal ID number for your PC. Scan the **Terminal ID** bar code below, then scan the numeric bar code(s) from the Programming Chart inside the back cover of this manual to program the scanner for your terminal ID. Scan **Save** to save your selection.

For example, an IBM AT terminal has a Terminal ID of 003. You would scan the **Terminal ID** bar code, then **0**, **0**, **3** from the Programming Chart inside the back cover of this manual, then **Save**. If you make an error while scanning the digits (before scanning Save), scan the **Discard** code on the Programming Chart, scan the **Terminal ID** bar code, scan the digits, and the **Save** code again.

Note: The default interface for the IT2020-5B is Keyboard Wedge (Term ID = 003).

Terminal ID

Save

Note: After scanning one of these codes, you must power cycle your computer.

Supported Terminals

Terminal	Model(s)	Terminal ID
DEC	VT510, 520, 525 (PC style)	005
DEC	VT510, 520, 525 (DEC style LK411)	104
Esprit	200, 400	005
Heath Zenith	PC, AT	003*
HP	Vectra	003*
IBM	XT	001
IBM	PS/2 25, 30, 77DX2	002
IBM	AT, PS/2 30–286, 50, 55SX, 60, 70, 70–061, 70–121, 80	003*
IBM 102 key	3151, 3161, 3162, 3163, 3191, 3192, 3194, 3196, 3197, 3471, 3472, 3476, 3477	006
IBM 122 key	3191, 3192, 3471, 3472	007
IBM 122 key	3196, 3197, 3476, 3477, 3486, 3482, 3488	008
IBM 122 key	3180	024
IBM 122 key	3180 data entry keyboard	114
IBM DOS/V 106 key	PC & Workstation	102
IBM SurePOS	USB Hand Held Scanner	128**
IBM SurePOS	USB Tabletop Scanner	129**
IBM Thinkpad	360 CSE, 340, 750	097
IBM Thinkpad		106
IBM Thinkpad	365, 755CV	003*
I/O 122 key	2676D, 2677C, 2677D	008
ITT	9271	007
Lee Data	IIS	007
NEC	98XX Series	103
Olivetti	M19, M200	001
Olivetti	M240, M250, M290, M380, P500	003*
RS-232 TTL		000
Serial Wedge		050
Silicon Graphics	Indy, Indigoll	005
Telex 88 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	025
Telex 88 key	Data Entry Keyboard	112
Telex 102 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1483	045

Supported Terminals (Continued)

Terminal	Model(s)	Terminal ID
Telex 122 key	078, 078A, 79, 80, 191, 196, 1191,1192, 1471, 1472, 1476, 1477, 1482, 1483	046
USB PC Keyboard		124**
USB Mac Keyboard		125**
USB Com Port		130
USB HIDPOS		131**
Wand Emulation (Code 39 Format)		061
Wand Emulation (Same Code Format)		064

* Default for IT2020-5B.
**It is best to use the Plug and Play bar codes, beginning on page 1-25 to program these interfaces, rather than scanning the terminal ID listed in this table.

Keyboard Country

Scan the appropriate country code below to program the keyboard for your country. As a general rule, the following characters are supported, but need special care for countries other than the United States:
@ | $ # { } [ ] = / ‘ \ < > ~

* United States

Belgium

Denmark

Finland

France

Germany/Austria

Great Britain

Italy

Norway

Spain

Switzerland

Please refer to the Hand Held Products website (www.handheld.com) for complete keyboard country support information and applicable interfaces. If you need to program a keyboard for a country other than one listed above, scan the **Program Keyboard Country** bar code below, then scan the numeric bar code(s) for the appropriate country from the inside back cover, then the **Save** bar code.

Program Keyboard Country

Keyboard Style

This programs keyboard styles, such as Caps Lock and Shift Lock. *Default = Regular.*

Regular is used when you normally have the Caps Lock key off.

* Regular

Caps Lock is used when you normally have the Caps Lock key on.

Caps Lock

Shift Lock is used when you normally have the Shift Lock key on (not common to U.S. keyboards).

Shift Lock

Automatic Caps Lock is used if you change the Caps Lock key on and off. The software tracks and reflects if you have Caps Lock on or off (AT and PS/2 only). This selection can only be used with systems that have an LED which notes the Caps Lock status.

Automatic Caps Lock

Autocaps via NumLock bar code should be scanned in countries (e.g., Germany, France) where the Caps Lock key cannot be used to toggle Caps Lock. The NumLock option works similarly to the regular Auotcaps, but uses the NumLock key to retrieve the current state of the Caps Lock.

Autocaps via NumLock

Emulate External Keyboard should be scanned if you do not have an external keyboard (IBM AT or equivalent).

Emulate External Keyboard

Note: After scanning the Emulate External Keyboard bar code, you must power cycle your computer.

Keyboard Modifiers

This modifies special keyboard features, such as CTRL+ ASCII codes and Turbo Mode.

Control + ASCII Mode On: The scanner sends key combinations for ASCII control characters for values 00-1F. Refer to Keyboard Function Relationships, page 7-1 for CTRL+ ASCII Values. *Default = Off*

Control + ASCII Mode On

* Control + ASCII Mode Off

Turbo Mode: The scanner sends characters to a terminal faster. If the terminal drops characters, do not use Turbo Mode. *Default = Off*

Turbo Mode On

* Turbo Mode Off

Numeric Keypad Mode: Sends numeric characters as if entered from a numeric keypad. *Default = Off*

Numeric Keypad Mode On

* Numeric Keypad Mode Off

Automatic Direct Connect Mode: This selection can be used if you have an IBM AT style terminal and the system is dropping characters. *Default = Off*

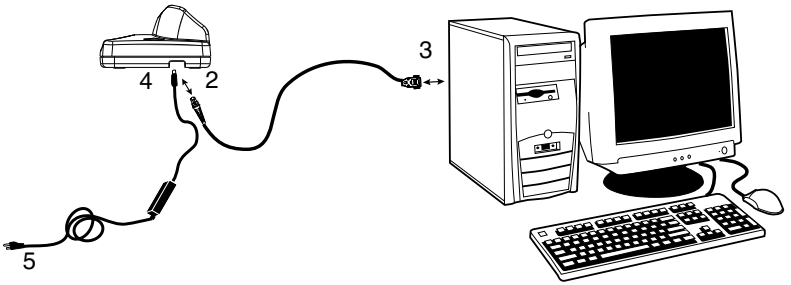
Automatic Direct
Connect Mode On

* Automatic Direct Connect
Mode Off

Connecting the Base with RS-232 Serial Port

1. Turn off power to the terminal/computer.
2. Connect the appropriate interface cable to the base.

Note: For the base to work properly, you must have the correct cable for your type of terminal/computer.



3. Plug the serial connector into the serial port on your computer. Tighten the two screws to secure the connector to the port.
4. Plug the power supply barrel connector to the base, and plug the power supply into the AC source.
5. Once the base has been fully connected, power up the computer.

All communication parameters between the scanner and terminal must match for correct data transfer through the serial port using RS-232 protocol. Scanning the RS-232 interface bar code, programs the scanner for an RS-232 interface at 115,200 baud, parity–none, 8 data bits, 1 stop bit, and adds a suffix of a CR LF.

RS-232 Interface

RS-232 Baud Rate

Baud Rate sends the data from the scanner to the terminal at the specified rate. The host terminal must be set for the same baud rate as the scanner. *Default = 115,200*.

300

600

1200

2400

4800

9600

19200

38400

57,600

* 115,200

RS-232 Word Length: Data Bits, Stop Bits, and Parity

Data Bits sets the word length at 7 or 8 bits of data per character. If an application requires only ASCII Hex characters 0 through 7F decimal (text, digits, and punctuation), select 7 data bits. For applications which require use of the full ASCII set, select 8 data bits per character. *Default = 8.*

Stop Bits sets the stop bits at 1 or 2. *Default = 1.*

Parity provides a means of checking character bit patterns for validity. *Default = None.*

7 Data, 1 Stop, Parity Even

7 Data, 1 Stop, Parity Odd

7 Data, 2 Stop Parity None

8 Data, 1 Stop, Parity Even

8 Data, 1 Stop, Parity Odd

7 Data, 1 Stop, Parity None

7 Data, 2 Stop, Parity Even

7 Data, 2 Stop, Parity Odd

* 8 Data, 1 Stop, Parity None

RS-232 Handshaking

RS-232 Handshaking allows control of data transmission from the scanner using software commands from the host device. CTS/RTS operates in mode 2. When this feature is turned ***Off***, no data flow control is used. When Data Flow Control is turned ***On***, the host device suspends transmission by sending the XOFF character (DC3, hex 13) to the scanner. To resume transmission, the host sends the XON character (DC1, hex 11). Data transmission continues where it left off when XOFF was sent. *Default = RTS/CTS, XON/XOFF and ACK/NAK Off.*

RTS/CTS On

* RTS/CTS Off

XON/XOFF On

* XON/OFF Off

ACK/NAK On

* ACK/NAK Off

Host ACK Selection

Some applications require that the host terminal (or server) approve or reject incoming bar code data and notify the operator of these actions. These applications require that the host maintain control over the response indicators emitted from the source scanner. Turning the Host ACK selection on, configures the cordless system scanners to respond to commands from the host system.

The following criteria must be met for the Host ACK to work correctly:

- The cordless system must be configured for “Host Port RS-232” (Terminal ID = 000)
- RTS/CTS is defaulted off. You must enable it if the host system requires it.
- Host ACK must be enabled (page 2-11).
- System performance degrades when using Host ACK at rates lower than 9600.
- The host terminal software must be capable of interpreting the bar code data, make decisions based on the data content, and send out appropriate escape commands to the source scanner.

Escape commands are addressed to the source scanner via “Application Work Groups.” Once a command is sent, all scanners in a group respond to that command. Because of this situation, **it is recommended that each scanner is assigned to its own group in host ACK mode**.

The commands to which the scanner responds are listed on page 2-12. The **<ESC>** is a **1B** in hex. A typical command string is **y <ESC> x,** where "y" is the application work group number, "<ESC> x" is the escape command, and the comma is the terminator.

Commands may be strung together to create custom response sequences. An example of a command string is listed below.

0<ESC>4<ESC>5<ESC>6,

The above example will make a scanner in application work group zero beep low**,** medium, high.

Once Host ACK is enabled, the system works as follows:

- The scanner reads a code and sends data to the base/host system. No audible or visual indication is emitted until you receive an escape command. The scanner read illumination goes out upon a successful read.
- Scanner is suspended until 1) a valid escape string is received from the host system (via the base) or 2) the scanner "times out."
- Once condition 1 or 2 above has been met, the scanner is ready to scan again, and the process repeats.

Time out is indicated by three rapid beeps at the same pitch. A time out occurs if the source scanner does not receive a valid escape command in 10 seconds. If a time out occurs, the operator should check the host system to understand why a response to the scanner was not received.

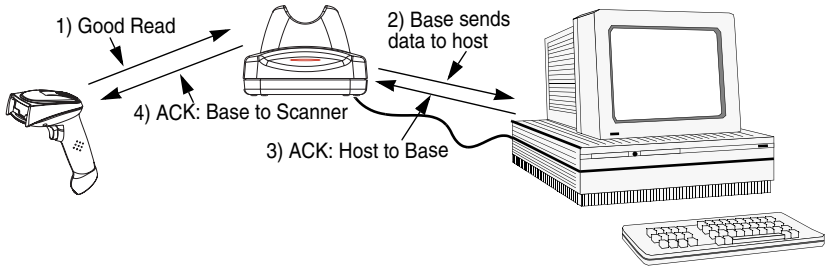
Host ACK Enable

Host ACK On

* Host ACK Off

IT2020-5B Host Escape Commands

Command	Action
<ESC> a	Indicate as if successful menu change made
<ESC> b	Indicate as if unsuccessful menu change made
<ESC> 1	Illuminate green LED for 135 milliseconds (followed by at least 70 mSecs. dark time when multiple blinks)
<ESC> 2	Illuminate green LED for two seconds (followed by at least 500 mSecs. dark time when multiple blinks)
<ESC> 3	Illuminate green LED for five seconds (followed by at least 500 mSecs. dark time when multiple blinks)
<ESC> 4	One beep at low volume
<ESC> 5	One beep at medium volume
<ESC> 6	One beep at high volume
<ESC> 7	Indicate as successful decode and communication to host.
<ESC> 8	Indicate as unsuccessful decode and communication to host.



Wand Emulation

Wand Emulation Connection

The Wand Emulation Connection bar codes should be used if you want to change the terminal ID *only*, without changing any other scanner settings. We recommend using Wand Emulation Plug & Play bar codes to program your scanner to emulate a wand reader. The Wand Emulation Plug & Play bar codes change other parameters, in addition to changing the terminal ID. Please refer to Wand Emulation Plug & Play on page 1-22 for further information.

In Wand Emulation mode, the scanner decodes the bar code then sends data in the same format as a wand scanner. The Code 39 Format converts all symbologies to Code 39.

The Same Code Format transmits UPC, EAN, Code 128 and Interleaved 2 of 5 without any changes, but converts all other symbologies to Code 39. 2D symbologies are converted to Code 128.

The ***Code 39 Format*** bar code below sets the terminal ID to 61, and the ***Same Code Format*** bar code sets the terminal ID to 64.

Code 39 Format

Same Code Format

Wand Emulation Transmission Rate

The transmission rate is limited by the terminal's ability to receive data without dropping characters. *Default = 25 inches/second.*

10

* 25

40

80

120

150

200

Wand Emulation Polarity

The Polarity can be sent as standard with black bars high, or reversed with white bars high. *Default = Black High.*

* Black High

White High

Wand Emulation Idle

The idle describes the state of the scanner when no data is being transmitted. When in Wand Emulation mode, you must set the scanner's idle state to match the idle state for the device to which the scanner is connected. *Default = Idle High*.

* Idle High

Idle Low

Wand Emulation Data Block Size

This transmits the data in smaller blocks to prevent buffer overflow. *Default = 40.*

20

* 40

60

80

Wand Emulation Delay Between Blocks

This sets the delay time between data blocks. *Default = 50ms.*

5ms

* 50ms

150ms

500ms

Wand Emulation Overall Checksum

When this option is turned on, a computed check character is added at the end of the entire message. The check character is the character which when Exclusive-OR'd with every preceding character of the message yields a result of 0x00 (00H). *Default = Off.*

Wand Emulation Overall Checksum On

* Wand Emulation Overall Checksum Off

3 Output

Scanner Functions

Good Read Indicators

Beeper – Good Read

The beeper may be programmed On or Off in response to a good read. Turning this option off, only turns off the beeper response to a good read indication. All error and menu beeps are still audible. *Default = On.*

* Beeper - Good Read On

Beeper - Good Read Off

Beeper Volume – Good Read

The beeper volume codes modify the volume of the beep the scanner emits on a good read. *Default = Medium.*

Low

* Medium

High

Off

Beeper Pitch – Good Read

The beeper pitch codes modify the pitch (frequency) of the beep the scanner emits on a good read. *Default = Medium.*

Low (1600 Hz)

* Medium (3250 Hz)

High (4200 Hz)

Beeper Duration – Good Read

The beeper duration codes modify the length of the beep the scanner emits on a good read. *Default = Normal.*

* Normal Beep

Short Beep

LED – Good Read

The LED indicator can be programmed On or Off in response to a good read. *Default = On.*

*LED - Good Read On

LED - Good Read Off

Number of Beeps – Good Read

The number of beeps of a good read can be programmed from 1 - 9. The same number of beeps will be applied to the beeper and LED in response to a good read. For example, if you program this option to have five beeps, there will be five beeps and five LED flashes in response to a good read. The beeps and LED flashes are in sync with one another. To change the number of beeps, scan the bar code below and then scan a digit (1-9) bar code and the **Save** bar code on the Programming Chart inside the back cover of this manual. *Default = One.*

Number of Beeps/LED Flashes

Good Read Delay

This sets the minimum amount of time before the scanner can read another bar code. *Default = 0 ms (No Delay.*)

***** No Delay

Short Delay (500 ms)

Medium Delay (1000 ms)

Long Delay (1500 ms)

User-Specified Good Read Delay

If you want to set your own length for the good read delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning ***Save***.

User-Specified Good Read Delay

Scanner Trigger Modes

Manual/Serial Trigger, Low Power

You can activate the scanner either by pressing the trigger, or using a serial trigger command (see "Trigger Commands" on page 10-4). When in manual trigger mode, the scanner scans until a bar code is read, or until the trigger is released.

When in serial mode, the scanner scans until a bar code has been read or until the deactivate command is sent. In serial mode, the scanner can also be set to turn itself off after a specified time has elapsed (see Read Time-Out (Serial Trigger Mode), which follows).

* Manual/Serial Trigger

Read Time-Out (Serial Trigger Mode)

Use this selection to set a time-out (in milliseconds) of the scanner's trigger when using serial commands to trigger the scanner. Once the scanner has timed out, you can activate the scanner either by pressing the trigger or using a serial trigger command. After scanning the **Read Time-Out** bar code, set the time-out duration (from 0-300,000 milliseconds) by scanning digits on the Programming Chart inside the back cover, then scanning **Save**. *Default = 300,000 ms.*

Read Time-Out

Scanner Power Time-Out Timer

Note: The Scanner Power Time-out Timer option only applies to Manual/Serial Trigger.

When there is no activity within a specified time period, the scanner enters low power mode. Scan the appropriate Scanner Power Time-Out bar code to change the time-out duration (in seconds).

Note: Scanning zero (0) is the equivalent of setting no time-out.

If there are no trigger pulls during the “scanner power time-out timer” interval, the scanner goes into power down mode. Whenever the trigger is enabled, the “scanner power time-out timer” is reset. If the scanner is placed in the IT2020-5B cradle and the battery is in the process of being charged, the scanner will not go into power down mode.

0 seconds

200 seconds

400 seconds

900 seconds

* 3600 seconds

7200 seconds

Note: When the scanner is in power down mode, pull the trigger to power the unit back up. There will be a set of power up beeps and a delay of up to a few seconds for the radio to join. The scanner will then be ready to use.

Automatic Trigger

The scanner scans continuously at full power with illumination fully on.

Automatic Trigger

Presentation Mode

The LEDs are off until a bar code is presented to the scanner. Then the LEDs turn on automatically to read the code. Presentation Mode uses ambient light to detect the bar codes. If the light level in the room is not high enough, Presentation Mode will not work properly.

Presentation Mode

Hands Free Time-Out

The Automatic Trigger and Presentation Modes are referred to as “hands free” modes. If the scanner’s trigger is pulled when using a hands free mode, the scanner changes to manual trigger mode. You can set the time the scanner should remain in manual trigger mode by setting the Hands Free Time-Out. Once the time-out value is reached, (if there have been no further trigger pulls) the scanner reverts to the original hands free mode.

Scan the ***Hands Free Time-Out*** bar code, then scan the time-out duration (from 0-300,000 milliseconds) from the inside back cover, and ***Save***. *Default = 5,000 ms.*

Hands Free Time-Out

Reread Delay

This sets the time period before the scanner can read the *same* bar code a second time. Setting a reread delay protects against accidental rereads of the same bar code. Longer delays are effective in minimizing accidental rereads at POS (point of sale). Use shorter delays in applications where repetitive bar code scanning is required. *Default = Medium.*

Reread Delay only works when in automatic trigger mode (see page 3-5).

Short (500 ms)

***** Medium (750 ms)

Long (1000 ms)

Extra Long (2000 ms)

User-Specified Reread Delay

If you want to set your own length for the reread delay, scan the bar code below, then set the delay (from 0-30,000 milliseconds) by scanning digits from the inside back cover, then scanning ***Save***.

User-Specified Reread Delay

Centering Window

Use the centering feature to narrow the scanner's field of view so the scanner reads only the bar code you want. When centering is turned on, the scanner only reads codes that intersect or are contained within the centering window you set up. At least part of a bar code must be within the window to be decoded or output by the scanner.

To change the left or right edge of the centering window, scan Centering On, then scan one of the following bar codes. Then scan the percent you want to shift the centering window using digits on the inside back cover of this manual. Scan **Save**. Default Centering = 40% for Left, 60% for Right.

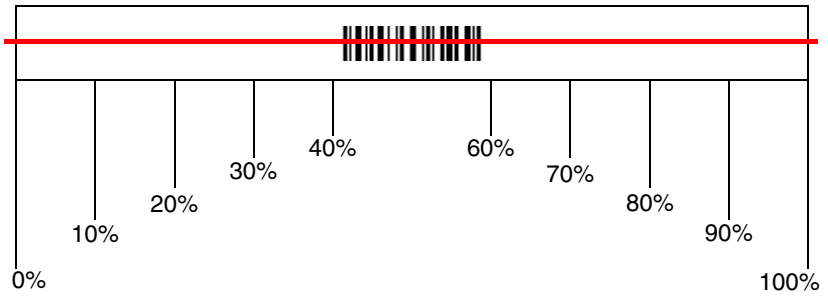
Centering On

* Centering Off

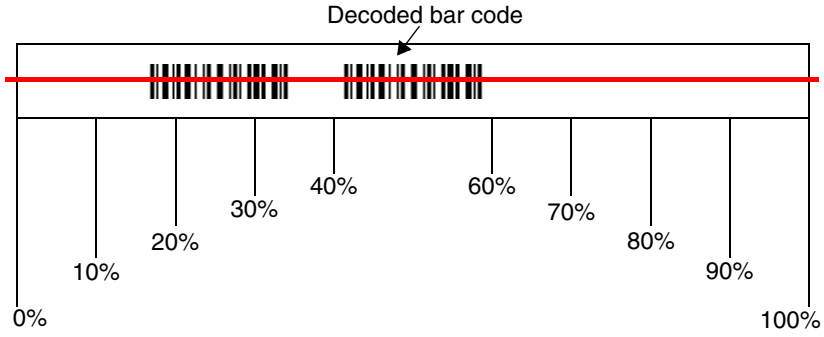
Left of Centering Window

Right of Centering Window

The figure below illustrates the percentage range from 1 to 100%.



Example: If you have two bar codes next to one another and the centering window is set to 40% left edge and 60% right edge, only the bar code that intersects that window will be decoded.



Output Sequence Overview

Require Output Sequence

When turned off, the bar code data will be output to the host as the scanner decodes it. When turned on, all output data must conform to an edited sequence or the scanner will not transmit the output data to the host device.

Note: This selection is unavailable when the Multiple Symbols Selection is turned on.

Output Sequence Editor

This programming selection allows you to program the scanner to output data (when scanning more than one symbol) in whatever order your application requires, regardless of the order in which the bar codes are scanned. Reading the ***Default Sequence*** symbol programs the scanner to the Universal values, shown below. These are the defaults. Be **certain** you want to delete or clear all formats before you read the ***Default Sequence*** symbol.

Note: To make Output Sequence Editor selections, you'll need to know the code I.D., code length, and character match(es) your application requires. Use the Alphanumeric symbols (inside back cover) to read these options.

To Add an Output Sequence

1. Scan the ***Enter Sequence*** symbol (see Multiple Symbols, page 3-12).
2. **Code I.D.**
   On the Symbology Chart on page A-1, find the symbology to which you want to apply the output sequence format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

3. **Length**
   Specify what length (up to 9999 characters) of data output will be acceptable for this symbology. Scan the four digit data length from the Programming Chart inside the back cover of this manual. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.) When calculating the length, you must count any programmed prefixes, suffixes, or formatted characters as part of the length (unless using 9999).
4. **Character Match Sequences**
   On the ASCII Conversion Chart (Code Page 1252) on page A-2, find the Hex value that represents the character(s) you want to match. Use the Programming Chart inside the back cover of this manual to read the alphanumeric combination that represents the ASCII characters. (99 is the Universal number, indicating all characters.)
5. **End Output Sequence Editor**
   Scan ***F F*** to enter an Output Sequence for an additional symbology, or ***Save*** to save your entries.

Other Programming Selections

- ***Discard***
  This exits without saving any Output Sequence changes.

Output Sequence Editor

Enter Sequence

Default Sequence

Require Output Sequence

When an output sequence is ***Required***, all output data must conform to an edited sequence or the scanner will not transmit the output data to the host device. When it's ***On/Not Required***, the scanner will attempt to get the output data to conform to an edited sequence, but if it cannot, the scanner transmits all output data to the host device as is.

When the output sequence is ***Off***, the bar code data is output to the host as the scanner decodes it.

Note: This selection is unavailable when the Multiple Symbols Selection is turned on.

Required

On/Not Required

* Off

Output Sequence Example

In this example, you are scanning Code 93, Code 128, and Code 39 bar codes, but you want the scanner to output Code 39 1st, Code 128 2nd, and Code 93 3rd, as shown below.

Note: Code 93 must be enabled to use this example.

A - Code 39

B - Code 128

C - Code 93

You would set up the sequence editor with the following command line:

SEQBLK62999941FF6A999942FF69999943FF

The breakdown of the command line is shown below:

SEQBLKsequence editor start command
62 code identifier for **Code 39**
9999 code length that must match for Code 39, 9999 = all lengths

41 start character match for Code 39, 41h = “A”
FF termination string for first code
6A code identifier for **Code 128**
9999 code length that must match for Code 128, 9999 = all lengths
42 start character match for Code 128, 42h = “B”
FF termination string for second code
69 code identifier for **Code 93**
9999 code length that must match for Code 93, 9999 = all lengths
43 start character match for Code 93, 43h = “C”
FF termination string for third code

To program the previous example using specific lengths, you would have to count any programmed prefixes, suffixes, or formatted characters as part of the length. If you use the example on page 3-10, but assume a <CR> suffix and specific code lengths, you would use the following command line:

SEQBLK62001241FF6A001342FF69001243FF

The breakdown of the command line is shown below:

SEQBLK sequence editor start command
62 code identifier for **Code 39**
0012 A - Code 39 sample length (11) plus CR suffix (1) = 12
41 start character match for Code 39, 41h = “A”
FF termination string for first code
6A code identifier for **Code 128**
0013 B - Code 128 sample length (12) plus CR suffix (1) = 13
42 start character match for Code 128, 42h = “B”
FF termination string for second code
69 code identifier for **Code 93**
0012 C - Code 93 sample length (11) plus CR suffix (1) = 12
43 start character match for Code 93, 43h = “C”
FF termination string for third code

Multiple Symbols

When this programming selection is turned ***On***, it allows you to read multiple symbols with a single pull of the scanner's trigger. If you press and hold the trigger, aiming the scanner at a series of symbols, it reads unique symbols once, beeping (if turned on) for each read. The scanner attempts to find and decode new symbols as long as the trigger is pulled. When this programming selection is turned ***Off***, the scanner will only read the symbol closest to the aiming beam.

Multiple Symbols On

***** Multiple Symbols Off

No Read

With No Read turned ***On***, the scanner sends an "NR" to the host if you pull and release the trigger without reading a code (e.g., bad bar code). If No Read is turned ***Off***, the "NR" will not be sent to the host.

No Read On

***** No Read Off

If you want a different notation than "NR," for example, "Error," or "Bad Code," you can edit the output message using the Data Formatter (page 5-5). The hex code for the No Read symbol is 9C.

Video Reverse

Video Reverse is used to allow the scanner to read bar codes that are inverted. The "Off" bar code below is an example of this type of bar code.

Note: If additional menuing is required, Video Reverse must be disabled to read the menu bar codes and then re-enabled after menuing is completed.

Video Reverse On

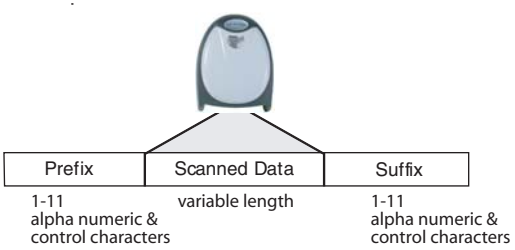
***** Video Reverse Off

4 Data Editing

Prefix/Suffix Overview

When a bar code is scanned, additional information is sent to the host computer along with the bar code data. This group of bar code data and additional, user-defined data is called a “message string.” The selections in this section are used to build the user-defined data into the message string.

Prefix and Suffix characters are data characters that can be sent before and after scanned data. You can specify if they should be sent with all symbologies, or only with specific symbologies. The following illustration shows the breakdown of a message string:



Points to Keep In Mind

- It is not necessary to build a message string. The selections in this chapter are only used if you wish to alter the default settings. *Default prefix = None. Default suffix = None*.
- A prefix or suffix may be added or cleared from one symbology or all symbologies.
- You can add any prefix or suffix from the ASCII Conversion Chart (Code Page 1252) on page A-2, plus Code I.D. and AIM I.D.
- You can string together several entries for several symbologies at one time.
- Enter prefixes and suffixes in the order in which you want them to appear on the output.
- When setting up for specific symbologies (as opposed to all symbologies), the specific symbology ID value counts as an added prefix or suffix character.

To Add a Prefix or Suffix:

Step 1. Scan the **Add Prefix** or **Add Suffix** symbol (page 4-3).

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the Appendix A) for the symbology to which you want to apply the prefix or suffix. For example, for Code 128, Code ID is "j" and Hex ID is "6A".

Step 3. Scan the 2 hex digits from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Step 4. Determine the hex value from the ASCII Conversion Chart (Code Page 1252) on page A-2, for the prefix or suffix you wish to enter.

Step 5. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

Step 6. Repeat Steps 4 and 5 for every prefix or suffix character.

Step 7. To add the Code I.D., scan **5**, **C**, **8**, **0**.
To add AIM I.D., scan **5**, **C**, **8**, **1**.
To add a backslash (\), scan **5**, **C**, **5**, **C**.

Note: To add a backslash (\) as in Step 7, you must scan 5C twice – once to create the leading backslash and then to create the backslash itself.

Step 8. Scan **Save** to exit and save, or scan **Discard** to exit without saving.

Repeat Steps 1-6 to add a prefix or suffix for another symbology.

Example: Add a Suffix to a specific symbology

To send a CR (carriage return) Suffix for UPC only:

Step 1. Scan **Add Suffix**.

Step 2. Determine the 2 digit hex value from the Symbology Chart (included in the Appendix A) for UPC.

Step 3. Scan **6**, **3** from the Programming Chart inside the back cover of this manual.

Step 4. Determine the hex value from the ASCII Conversion Chart (Code Page 1252) on page A-2, for the CR (carriage return).

Step 5. Scan **0**, **D** from the Programming Chart inside the back cover of this manual.

Step 6. Scan **Save**, or scan **Discard** to exit without saving.

To Clear One or All Prefixes or Suffixes:

You can clear a single prefix or suffix, or clear all prefixes/suffixes for a symbology. When you Clear One Prefix (Suffix), the specific character you select is deleted from the symbology you want. When you Clear All Prefixes (Suffixes), all the prefixes or suffixes for a symbology are deleted.

Step 1. Scan the **Clear One Prefix** or **Clear One Suffix** symbol.

Step 2. Determine the 2 digit Hex value from the Symbology Chart (included in the Appendix A) for the symbology from which you want to clear the prefix or suffix.

Step 3. Scan the 2 digit hex value from the Programming Chart inside the back cover of this manual or scan **9**, **9** for all symbologies.

Your change is automatically saved.

To Add a Carriage Return Suffix to all Symbologies

Scan the following bar code if you wish to add a carriage return suffix to all symbologies at once. This action first clears all current suffixes, then programs a carriage return suffix for all symbologies.

Add CR Suffix
All Symbologies

Prefix Selections

Add Prefix

Clear One Prefix

Clear All Prefixes

Suffix Selections

Add Suffix

Clear One Suffix

Clear All Suffixes

Function Code Transmit

When this selection is enabled and function codes are contained within the scanned data, the scanner transmits the function code to the terminal. Charts of these function codes are provided in Supported Interface Keys starting on page 7-3. When the scanner is in keyboard wedge mode, the scan code is converted to a key code before it is transmitted. *Default = Enable.*

* Enable

Disable

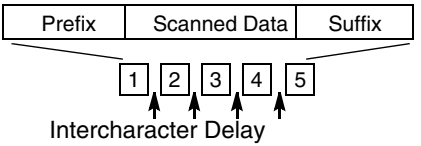
Intercharacter, Interfunction, and Intermessage Delays

Some terminals drop information (characters) if data comes through too quickly. Intercharacter, interfunction, and intermessage delays slow the transmission of data, increasing data integrity.

Each delay is composed of a 5 millisecond step. You can program up to 99 steps (of 5 ms each) for a range of 0-495 ms.

Intercharacter Delay

An intercharacter delay of up to 495 milliseconds may be placed between the transmission of each character of scanned data. Scan the **Intercharacter Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the Programming Chart inside the back cover of this manual.



Intercharacter Delay

To remove this delay, scan the **Intercharacter Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

Note: Intercharacter delays are not supported in USB serial emulation.

User Specified Intercharacter Delay

An intercharacter delay of up to 495 milliseconds may be placed after the transmission of a particular character of scanned data. Scan the **Delay Length** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

Next, scan the **Character to Trigger Delay** bar code, then the 2-digit hex value for the ASCII character that will trigger the delay ASCII Conversion Chart (Code Page 1252) on page A-2.

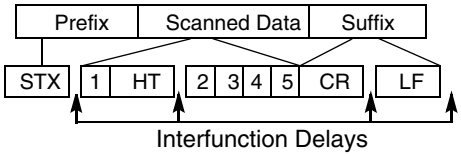
Delay Length

Character to Trigger Delay

To remove this delay, scan the **Delay Length** bar code, and set the number of steps to 0. Scan the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

Interfunction Delay

An interfunction delay of up to 495 milliseconds may be placed between the transmission of each segment of the message string. Scan the **Interfunction Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

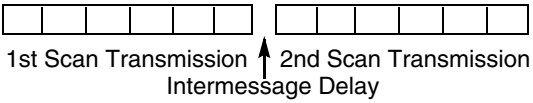


Interfunction Delay

To remove this delay, scan the **Interfunction Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

Intermessage Delay

An intermessage delay of up to 495 milliseconds may be placed between each scan transmission. Scan the **Intermessage Delay** bar code below, then scan the number of milliseconds and the **SAVE** bar code using the Programming Chart inside the back cover of this manual.



Intermessage Delay

To remove this delay, scan the **Intermessage Delay** bar code, then set the number of steps to 0. Scan the **SAVE** bar code using the Programming Chart inside the back cover of this manual.

5 Data Formatting

Data Format Editor Introduction

You may use the Data Format Editor to change the scanner's output. For example, you can use the Data Format Editor to insert characters at certain points in bar code data as it is scanned. The selections in the following pages are used only if you wish to alter the output. *Default Data Format setting = None.*

Normally, when you scan a bar code, it gets outputted automatically; however when you do a format, you must use a "send" command (see Send Commands on page 5-2) within the format program to output data.

Multiple formats may be programmed into the scanner. They are stacked in the order in which they are entered. However, the following list presents the order in which formats are applied:

1. Specific Term ID, Actual Code ID, Actual Length
2. Specific Term ID, Actual Code ID, Universal Length
3. Specific Term ID, Universal Code ID, Actual Length
4. Specific Term ID, Universal Code ID, Universal Length
5. Universal Term ID, Actual Code ID, Actual Length
6. Universal Term ID, Actual Code ID, Universal Length
7. Universal Term ID, Universal Code ID, Actual Length
8. Universal Term ID, Universal Code ID, Universal Length

If you have changed data format settings, and wish to clear all formats and return to the factory defaults, scan the **Default Data Format** code on page 5-4.

To Add a Data Format

Step 1. Scan the **Enter Data Format** symbol (page 5-4).

Step 2. Primary/Alternate Format

Determine if this will be your primary data format, or one of 3 alternate formats. (Alternate formats allow you "single shot" capability to scan one bar code using a different data format. After the one bar code has been read, the scanner reverts to the primary data format. See page 5-5.) If you are programming the primary format, scan **0** using the Programming Chart inside the back cover of this manual. If you are programming an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are programming.

Step 3. Terminal Type

Refer to the Supported Terminals Chart (page 2-2) and locate the Terminal ID number for your PC. Scan three numeric bar codes on the inside back cover to program the scanner for your terminal ID (you must enter 3 digits). For example, scan **0 0 3** for an AT wedge.

Note: The wildcard for all terminal types is 099.

Step 4. Code I.D.
In the Appendix A, find the symbology to which you want to apply the data format. Locate the Hex value for that symbology and scan the 2 digit hex value from the Programming Chart inside the back cover of this manual.

Step 5. Length
Specify what length (up to 9999 characters) of data will be acceptable for this symbology. Scan the four digit data length from the Programming Chart inside the back cover of this manual. (Note: 50 characters is entered as 0050. 9999 is a universal number, indicating all lengths.)

Step 6. Editor Commands
Refer to the Format Editor Commands Chart (page 5-2). Scan the symbols that represent the command you want to enter. 94 alphanumeric characters may be entered for each symbology data format.

Step 7. Scan **Save** from the Programming Chart inside the back cover of this manual to save your entries.

Other Programming Selections

- **Clear One Data Format**
  This deletes one data format for one symbology. If you are clearing the primary format, scan **0** from the Programming Chart inside the back cover of this manual. If you are clearing an alternate format, scan **1**, **2**, or **3**, depending on the alternate format you are clearing. Scan the Terminal Type (refer to the Supported Terminals Chart on page 2-2), Code I.D. (refer to the Symbology Chart on page A-1), and the bar code data length for the specific data format that you want to delete. All other formats remain unaffected.
- **Save** from the Programming Chart inside the back cover of this manual
  This exits, saving any Data Format changes.
- **Discard** from the Programming Chart inside the back cover of this manual
  This exits without saving any Data Format changes.

Data Format Editor Commands

Send Commands

F1 Send all characters followed by “xx” key or function code, starting from current cursor position. ***Syntax = F1xx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

F2 Send “nn” characters followed by “xx” key or function code, starting from current cursor position. ***Syntax = F2nnxx*** (nn stands for the numeric value (00-99) for the number of characters and xx stands for the hex value for an ASCII code. See ASCII Conversion Chart (Code Page 1252) on page A-2.)

F3 Send up to but not including “ss” character (Search and Send) starting from current cursor position, leaving cursor pointing to “ss” character followed by “xx” key or function code. ***Syntax = F3ssxx*** (ss and xx both stand for the

hex values for ASCII codes, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

F4 Send “xx” character “nn” times (Insert) leaving cursor in current cursor position. ***Syntax = F4xxnn*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2, and nn is the numeric value (00-99) for the number of times it should be sent.)

E9 Send all but the last “nn” characters, starting from the current cursor position. ***Syntax = E9nn*** (nn is the numeric value (00-99) for the number of characters that will not be sent at the end of the message.)

Move Commands

F5 Move the cursor ahead “nn” characters from current cursor position. ***Syntax = F5nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved ahead.)

F6 Move the cursor back “nn” characters from current cursor position. ***Syntax = F6nn*** (nn stands for the numeric value (00-99) for the number of characters the cursor should be moved back.)

F7 Move the cursor to the beginning of the data string. ***Syntax = F7.***

EA Move the cursor to the end of the data string. ***Syntax = EA***

Search Commands

F8 Search ahead for “xx” character from current cursor position, leaving cursor pointing to “xx” character. ***Syntax = F8xx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

F9 Search back for “xx” character from current cursor position, leaving cursor pointing to “xx” character. ***Syntax = F9xx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

E6 Search ahead for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. ***Syntax = E6xx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.

E7 Search back for the first non “xx” character from the current cursor position, leaving cursor pointing to non “xx” character. ***Syntax = E7xx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

Miscellaneous Commands

FB Suppress all occurrences of up to 15 different characters, starting at the current cursor position, as the cursor is advanced by other commands. When the FC command is encountered, the suppress function is terminated. The cursor is not moved by the FB command. **Syntax = FBnnxxyy . .zz** where nn is a count of the number of suppressed characters in the list and xxyy .. zz is the list of characters to be suppressed. (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

FC Disables suppress filter and clear all suppressed characters. ***Syntax = FC.***

E4 Replaces up to 15 characters in the data string with user specified characters. Replacement continues until the E5 command is encountered. ***Syntax = E4nnxx$_1$xx$_2$yy$_1$yy$_2$...zz$_1$zz$_2$*** where nn is the total count of both characters to be replaced plus replacement characters; xx$_1$ defines characters to be replaced and xx$_2$ defines replacement characters, continuing through zz$_1$ and zz$_2$.

E5 Terminates character replacement. ***Syntax = E5***.

FE Compare character in current cursor position to the character "xx." If characters are equal, increment cursor. If characters are not equal, no format match. ***Syntax = FExx*** (xx stands for the hex value for an ASCII code, see ASCII Conversion Chart (Code Page 1252) on page A-2.)

EC Check to make sure there is an ASCII number at the current cursor position. If character is not numeric, format is aborted. ***Syntax = EC***.

ED Check to make sure there is a non-numeric ASCII character at the current cursor position. If character is numeric, format is aborted. ***Syntax = ED***.

Data Format Editor

Enter Data Format

* Default Data Format

Clear One Data Format

Clear All Data Formats

Save

Discard

Data Formatter

When Data Formatter is turned off, the bar code data is output to the host as read (including prefixes and suffixes). Choose one of the following options. *Default = Data Formatter On.*

* Data Formatter On, but Not Required

Data Formatter Off

When Data Formatter is required, all input data must conform to an edited format or the scanner does not transmit the input data to the host device.

Data Format On, Format Required

Alternate Data Formats

Alternate formats allow you “single shot” capability to scan one bar code using a different data format than your primary format. When data formats are programmed (see page 5-1), you must input whether you are programming the primary format, or an alternate format numbered 1, 2, or 3.

An alternate format is initiated by scanning one of the 3 alternate format bar codes below. The scanner will scan the next bar code, formatting the data with the selected alternate format, then revert immediately to the primary format.

Alternate Data Format 1

Alternate Data Format 2

Alternate Data Format 3

6 Symbologies

Introduction

This programming section contains the following menu selections. Refer to Chapter 10 for settings and defaults.

- All Symbologies
- China Post
- Codabar
- Codablock F
- Code 2 of 5
- Code 11
- Code 16K
- Code 39
- Code 32 Pharmaceutical (PARAF)
- Code 49
- Code 93
- Code 128
- EAN/JAN
- IATA Code 2 of 5
- Interleaved 2 of 5
- Korea Post
- Matrix 2 of 5
- Coupon Code
- MSI
- Plessey Code
- PosiCode
- RSS-14
- Telepen
- Trioptic
- UPC-A
- UPC-E

All Symbologies

If you want to decode all the symbologies allowable for your scanner, scan the ***All Symbologies On*** code. If on the other hand, you want to decode only a particular symbology, scan All Symbologies Off followed by the On symbol for that particular symbology.

All Symbologies On

All Symbologies Off

Message Length

You are able to set the valid reading length of some of the bar code symbologies. If the data length of the scanned bar code doesn't match the valid reading length, the scanner will issue an error beep. You may wish to set the same value for minimum and maximum length to force the scanner to read fixed length bar code data. This helps reduce the chances of a misread.

EXAMPLE: Decode only those bar codes with a count of 9-20 characters.
Min. length = 09 Max. length = 20

EXAMPLE: Decode only those bar codes with a count of 15 characters.
Min. length = 15 Max. length = 15

For a value other than the minimum and maximum message length defaults, scan the bar codes included in the explanation of the symbology, then scan the digit value of the message length and **Save** bar codes on the Programming Chart inside the back cover of this manual. The minimum and maximum lengths and the defaults are included with the respective symbologies.

Codabar

<Default All Codabar Settings>

Codabar

* On

Off

Codabar Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters.
Default = Don't Transmit.

Transmit

* Don't Transmit

Codabar Check Character

Codabar check characters are created using different "modulos." You can program the scanner to read only Codabar bar codes with Modulo 16 check characters. *Default = No Check Character.*

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to ***Validate and Transmit***, the scanner will only read Codabar bar codes printed with a check character, and will transmit this character at the end of the scanned data.

When Check Character is set to ***Validate, but Don't Transmit***, the unit will only read Codabar bar codes printed ***with*** a check character, but will not transmit the check character with the scanned data.

* No Check Character

Validate Modulo 16, but Don't Transmit

Validate Modulo 16 and Transmit

Codabar Concatenation

Codabar supports symbol concatenation. When you enable concatenation, the scanner looks for a Codabar symbol having a "D" start character, adjacent to a symbol having a "D" stop character. In this case the two messages are concatenated into one with the "D" characters omitted. *Default = On.*

Select Require to prevent the scanner from decoding a single "D" Codabar symbol without its companion. This selection has no effect on Codabar symbols without Stop/Start D characters.

On

* Off

Require

Codabar Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 2-60. Minimum Default = 4, Maximum Default = 60.

Minimum Message Length

Maximum Message Length

Code 39

< Default All Code 39 Settings >

Code 39

* On

Off

Code 39 Start/Stop Characters

Start/Stop characters identify the leading and trailing ends of the bar code. You may either transmit, or not transmit Start/Stop characters. *Default = Don't Transmit.*

Transmit

* Don't Transmit

Code 39, continued

Code 39 Check Character

No Check Character indicates that the scanner reads and transmits bar code data with or without a check character.

When Check Character is set to **Validate, but Don't Transmit**, the unit only reads Code 39 bar codes printed with a check character, but will not transmit the check character with the scanned data.

When Check Character is set to **Validate and Transmit**, the scanner only reads Code 39 bar codes printed with a check character, and will transmit this character at the end of the scanned data. *Default = No Check Character.*

* No Check Character

Validate, but Don't Transmit

Validate and Transmit

Code 39 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 0-48. Minimum Default = 0, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

Code 39, continued

Code 39 Append

This function allows the scanner to append the data from several Code 39 bar codes together before transmitting them to the host computer. When this function is enabled, the scanner stores those Code 39 bar codes that start with a space (excluding the start and stop symbols), and does not immediately transmit the data. The scanner stores the data in the order in which the bar codes are read, deleting the first space from each. The scanner transmits the appended data when it reads a Code 39 bar code that starts with a character other than a space. *Default = Off.*

On

* Off

Code 32 Pharmaceutical (PARAF)

Code 32 Pharmaceutical is a form of the Code 39 symbology used by Italian pharmacies. This symbology is also known as PARAF.

Note: Trioptic Code must be turned off to scan Code 32 Pharmaceutical codes.

On

* Off

Full ASCII

If Full ASCII Code 39 decoding is enabled, certain character pairs within the bar code symbol will be interpreted as a single character. For example: $V will be decoded as the ASCII character SYN, and /C will be decoded as the ASCII character #. *Default = On*.

NUL	%U	DLE	$P	SP	SPACE	0	0	@	%V	P	P	‘	%W	p	+P
SOH	$A	DC1	$Q	!	/A	1	1	A	A	Q	Q	a	+A	q	+Q
STX	$B	DC2	$R	“	/B	2	2	B	B	R	R	b	+B	r	+R
ETX	$C	DC3	$S	#	/C	3	3	C	C	S	S	c	+C	s	+S
EOT	$D	DC4	$T	$	/D	4	4	D	D	T	T	d	+D	t	+T
ENQ	$E	NAK	$U	%	/E	5	5	E	E	U	U	e	+E	u	+U
ACK	$F	SYN	$V	&	/F	6	6	F	F	V	V	f	+F	v	+V
BEL	$G	ETB	$W	‘	/G	7	7	G	G	W	W	g	+G	w	+W
BS	$H	CAN	$X	(	/H	8	8	H	H	X	X	h	+H	x	+X
HT	$I	EM	$Y	)	/I	9	9	I	I	Y	Y	i	+I	y	+Y
LF	$J	SUB	$Z	*	/J	:	/Z	J	J	Z	Z	j	+J	z	+Z
VT	$K	ESC	%A	+	/K	;	%F	K	K	[	%K	k	+K	{	%P
FF	$L	FS	%B	,	/L	<	%G	L	L	\	%L	l	+L	|	%Q
CR	$M	GS	%C	-	-	=	%H	M	M	]	%M	m	+M	}	%R
SO	$N	RS	%D	.	.	>	%I	N	N	^	%N	n	+N	~	%S
SI	$O	US	%E	/	/O	?	%J	O	O	_	%O	o	+O	DEL	%T

Character pairs /M and /N decode as a minus sign and period respectively. Character pairs /P through /Y decode as 0 through 9.

Full ASCII On

* Full ASCII Off

Code 39 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created from the chart, Code Page Mapping of Printed Bar Codes on page A-4, and scan the value and the **SAVE** bar code from the Programming Chart inside the back cover of this manual. The data characters should then appear properly.

Code 39 Code Page

Interleaved 2 of 5

< Default All Interleaved 2 of 5 Settings >

Interleaved 2 of 5

* On

Off

Check Digit

No Check Digit indicates that the scanner reads and transmits bar code data with or without a check digit.

When Check Digit is set to **Validate, but Don't Transmit**, the unit only reads Interleaved 2 of 5 bar codes printed with a check digit, but will not transmit the check digit with the scanned data.

When Check Digit is set to **Validate and Transmit**, the scanner only reads Interleaved 2 of 5 bar codes printed with a check digit, and will transmit this digit at the end of the scanned data. *Default = No Check Digit.*

* No Check Digit

Validate, but Don't Transmit

Validate and Transmit

Interleaved 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 93

< Default All Code 93 Settings >

Code 93

* On

Off

Code 93 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 93 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created from the chart, Code Page Mapping of Printed Bar Codes on page A-4, and scan the value and the **SAVE** bar code from the Programming Chart inside the back cover of this manual. The data characters should then appear properly.

Code 93 Code Page

Code 2 of 5

<Default All Code 2 of 5 Settings>

Code 2 of 5

On

* Off

Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

IATA Code 2 of 5

<Default All Code IATA 2 of 5 Settings>

IATA Code 2 of 5, continued

On

* Off

IATA Code 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

Matrix 2 of 5

<Default All Matrix 2 of 5 Settings>

Matrix 2 of 5

On

* Off

Matrix 2 of 5 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 11

<Default All Code 11 Settings>

Code 11

On

* Off

Check Digits Required

This option sets whether 1 or 2 check digits are required with Code 11 bar codes. *Default = Two Check Digits.*

One Check Digit

* Two Check Digits

Code 11, continued

Code 11 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 128

<Default All Code 128 Settings>

Code 128

* On

Off

Code 128, continued

ISBT 128 Concatenation

In 1994 the International Society of Blood Transfusion (ISBT) ratified a standard for communicating critical blood information in a uniform manner. The use of ISBT formats requires a paid license. The ISBT 128 Application Specification describes 1) the critical data elements for labeling blood products, 2) the current recommendation to use Code 128 due to its high degree of security and its space-efficient design, 3) a variation of Code 128 that supports concatenation of neighboring symbols, and 4) the standard layout for bar codes on a blood product label. Use the bar codes below to turn concatenation on or off. *Default =Off.*

On

* Off

Code 128 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 0-80. Minimum Default = 0, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Code 128 Code Page

Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, scan the bar code below, select the code page with which the bar codes were created from the chart, Code Page Mapping of Printed Bar Codes on page A-4, and scan the value and the **SAVE** bar code from the Programming Chart inside the back cover of this manual. The data characters should then appear properly.

Code 128 Code Page

Code 128 Function Code Transmit

By default, Code 128 function codes are not transmitted with Code 128 bar code data. However, if you wish to transmit Code 128 function codes with the bar code data, scan the **Function Codes On** bar code, below.

* Function Codes Off

Function Codes On

Telepen

<Default All Telepen Settings>

Telepen

On

* Off

Telepen Output

Using AIM Telepen Output, the scanner reads symbols with start/stop pattern 1 and decodes them as standard full ASCII (start/stop pattern 1). When Original Telepen Output is selected, the scanner reads symbols with start/stop pattern 1 and decodes them as compressed numeric with optional full ASCII (start/stop pattern 2). *Default = AIM Telepen Output.*

* AIM Telepen Output

Original Telepen Output

Telepen Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-60. Minimum Default = 1, Maximum Default = 60.

Minimum Message Length

Maximum Message Length

UPC A

<Default All UPC A Settings>

UPC A

* On

Off

UPC A Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. Default = On.

* On

Off

UPC A Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. *Default = On.*

* On

Off

UPC A Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC A data.
Default = Off for both 2 Digit and 5 Digit Addenda.

2 Digit Addenda On

* 2 Digit Addenda Off

5 Digit Addenda On

* 5 Digit Addenda Off

UPC A Addenda Required

When Addenda Required is set to on, the scanner will only read UPC A bar codes that have addenda. *Default = Not Required.*

Required

* Not Required

UPC A Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space.
Default = On.

* On

Off

UPC-A/EAN-13 with Extended Coupon Code

Use the following codes to enable or disable UPC-A **and** EAN-13 with Extended Coupon Code. *Default = On.*

* On

Off

UPC E

<Default All UPC E Settings>

UPC E0 and UPC E1

Most U.P.C. bar codes lead with the 0 number system. For these codes, use the UPC E0 selection. If you need to read codes that lead with the 1 number system, use the UPC E1 selection. *Default = On (UPC E0) and Off (UPC E1).*

* UPC E0 On

UPC E0 Off

UPC E1 On

* UPC E1 Off

UPC E0 and UPC E1 Expand

UPC E Expand expands the UPC E code to the 12 digit, UPC A format. *Default = Off.*

On

* Off

UPC E0 and UPC E1 Addenda Required

When Addenda Required is set to on, the scanner will only read UPC E bar codes that have addenda. *Default = Not Required.*

Required

* Not Required

UPC E0 and UPC E1 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space.
Default = On.

* On

Off

UPC E0 Check Digit

Check Digit specifies whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*

* On

Off

UPC E0 Number System

The numeric system digit of a U.P.C. symbol is normally transmitted at the beginning of the scanned data, but the unit can be programmed so it will not transmit it. *Default = On.*

* On

Off

UPC E0 Addenda

This selection adds 2 or 5 digits to the end of all scanned UPC E data.
Default = Off for both 2 Digit and 5 Digit Addenda.

2 Digit Addenda On

* 2 Digit Addenda Off

5 Digit Addenda On

* 5 Digit Addenda Off

EAN/JAN 13

<Default All EAN/JAN Settings>

EAN/JAN 13

* On

Off

EAN/JAN 13 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*

* On

Off

EAN/JAN 13 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN 13 data.
Default = Off for both 2 Digit and 5 Digit Addenda.

2 Digit Addenda On

* 2 Digit Addenda Off

5 Digit Addenda On

* 5 Digit Addenda Off

EAN/JAN 13 Addenda Required

When Addenda Required is set to on, the scanner will only read EAN/JAN 13 bar codes that have addenda. *Default = Not Required.*

Required

* Not Required

EAN/JAN 13 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space.
Default = On.

* On

Off

Note: If you want to enable or disable EAN13 with Extended Coupon Code, refer to UPC-A/EAN-13 with Extended Coupon Code on page 6-20.

ISBN Translate

This selection causes EAN-13 Bookland symbols to be translated into their equivalent ISBN number format. *Default = Off.*

On

* Off

EAN/JAN 8

<Default All EAN/JAN 8 Settings>

EAN/JAN 8

* On

Off

EAN/JAN 8 Check Digit

This selection allows you to specify whether the check digit should be transmitted at the end of the scanned data or not. *Default = On.*

* On

Off

EAN/JAN 8 Addenda

This selection adds 2 or 5 digits to the end of all scanned EAN/JAN 8 data.
Default = Off for both 2 Digit and 5 Digit Addenda.

2 Digit Addenda On

* 2 Digit Addenda Off

5 Digit Addenda On

* 5 Digit Addenda Off

EAN/JAN 8 Addenda Required

When Addenda Required is set to on, the scanner will only read EAN/JAN 8 bar codes that have addenda. *Default = Not Required.*

Required

* Not Required

EAN/JAN 8 Addenda Separator

When this feature is on, there is a space between the data from the bar code and the data from the addenda. When turned off, there is no space.
Default = On.

* On

Off

MSI

<Default All MSI Settings>

MSI

On

* Off

MSI Check Character

Different types of check characters are used with MSI bar codes. You can program the scanner to read MSI bar codes with Type 10 check characters. *Default = Validate Type 10, but Don't Transmit.*

When Check Character is set to ***Validate and Transmit***, the scanner will only read MSI bar codes printed with the specified type check character, and will transmit this character at the end of the scanned data.

When Check Character is set to ***Validate, but Don't Transmit***, the unit will only read MSI bar codes printed with the specified type check character, but will not transmit the check character with the scanned data.

* Validate Type 10, but Don't Transmit

Validate Type 10 and Transmit

MSI Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

Plessey Code

<Default All Plessey Code Settings>

Plessey Code

On

* Off

Plessey Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 4-48. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

RSS-14

< Default All RSS-14 Settings >

RSS-14

* On

Off

RSS Limited

< Default All RSS Limited Settings >

RSS Limited

* On

Off

RSS Expanded

< Default All RSS Expanded Settings >

RSS Expanded

* On

Off

RSS Expanded Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 4-74. Minimum Default = 4, Maximum Default = 74.

Minimum Message Length

Maximum Message Length

EAN•UCC Emulation

The scanner can automatically format the output from any EAN•UCC data carrier to emulate what would be encoded in an equivalent UCC/EAN-128 or RSS+Composite symbol. EAN•UCC data carriers include UPC-A and UPC-E, EAN-13 and EAN-8, ITF-14, UCC/EAN-128, and EAN•UCC RSS and Composites. If UCC/EAN-128 Emulation is selected, the AIM Symbology

Identifier will be reported as “]C1”. If RSS Emulation is selected, the AIM Symbology Identifier will be reported as “]e0.” Any application that accepts EAN•UCC data can be simplified since it only needs to recognize one data carrier type. *Default = EAN•UCC Emulation Off*.

RSS Emulation

128 Emulation

* EAN•UCC Emulation Off

China Post Code

<Default All China Post Code Settings>

China Post Code

On

* Off

China Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 80.

Minimum Message Length

Maximum Message Length

Korea Post Code

<Default All Korea Post Code Settings>

Korea Post Code

On

* Off

Korea Post Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

PosiCode

<Default All PosiCode Settings>

PosiCode A and B

* On

Off

You have to have PosiCode A and B on to read any of the PosiCode symbologies.

A and B On
(No Limited)

A and B and Limited A On
(Limited B Off)

* A and B and Limited B On
(Limited A Off)

PosiCode Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 2-80. Minimum Default = 4, Maximum Default = 48.

Minimum Message Length

Maximum Message Length

Trioptic Code

Trioptic Code is used for labeling magnetic storage media.

Note: If you are going to scan Code 32 Pharmaceutical codes, Trioptic Code must be off.

On

* Off

Codablock F

<Default All Codablock F Settings>

Codablock F

On

* Off

Codablock F Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-2048. Minimum Default = 1, Maximum Default = 2048.

Minimum Message Length

Maximum Message Length

Code 16K

<Default All Code 16K Settings>

Code 16K

On

* Off

Code 16K Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 0-160. Minimum Default = 1, Maximum Default = 160.

Minimum Message Length

Maximum Message Length

Code 49

<Default All Code 49 Settings>

Code 49

* On

Off

Code 49 Message Length

Scan the bar codes below to change the message length. Refer to Message Length on page 6-2 for additional information. Minimum and Maximum lengths = 1-81. Minimum Default = 1, Maximum Default = 81.

Minimum Message Length

Maximum Message Length

Keyboard Function Relationships

The following Keyboard Function Code, Hex/ASCII Value, and Full ASCII "CTRL"+ relationships apply to all terminals that can be used with the scanner. Refer to page 2-6 enable Control + ASCII mode.

Function Code	HEX/ASCII Value	Full ASCII "CTRL" +
NUL	00	2
SOH	01	A
STX	02	B
ETX	03	C
EOT	04	D
ENQ	05	E
ACK	06	F
BEL	07	G
BS	08	H
HT	09	I
LF	0A	J
VT	0B	K
FF	0C	L
CR	0D	M
SO	0E	N
SI	0F	O
DLE	10	P
DC1	11	Q
DC2	12	R
DC3	13	S
DC4	14	T
NAK	15	U
SYN	16	V
ETB	17	W
CAN	18	X
EM	19	Y
SUB	1A	Z
ESC	1B	[
FS	1C	\
GS	1D	]
RS	1E	6
US	1F	-

The last five characters in the Full ASCII “CTRL”+ column ([\ ] 6 -), apply to US only. The following chart indicates the equivalents of these five characters for different countries.

Country	Codes				
United States	[	\	]	6	-
Belgium	[	<	]	6	-
Scandinavia	8	<	9	6	-
France	^	8	$	6	=
Germany		Ã	+	6	-
Italy		\	+	6	-
Switzerland		<	. .	6	-
United Kingdom	[	¢	]	6	-
Denmark	8	\	9	6	-
Norway	8	\	9	6	-
Spain	[	\	]	6	-

Supported Interface Keys

ASCII	HEX	IBM AT/XT and PS/2 Compatibles, WYSE PC/AT Supported Keys	IBM XTs and Compatibles Supported Keys	IBM, DDC, Memorex Telex, Harris* Supported Keys
NUL	00	Reserved	Reserved	Reserved
SOH	01	Enter (KP)	CR/Enter	Enter
STX	02	Cap Lock	Caps Lock	F11
ETX	03	ALT make	Reserved	F12
EOT	04	ALT break	Reserved	F13
ENQ	05	CTRL make	Reserved	F14
ACK	06	CTRL break	Reserved	F15
BEL	07	CR/Enter	CR/Enter	New Line
BS	08	Reserved	Reserved	F16
HT	09	Tab	Tab	F17
LF	0A	Reserved	Reserved	F18
VT	0B	Tab	Tab	Tab/Field Forward
FF	0C	Delete	Delete	Delete
CR	0D	CR/Enter	CR/Enter	Field Exit/New Line
SO	0E	Insert	Insert	Insert
SI	0F	Escape	Escape	F19
DLE	10	F11	Reserved	Error Reset
DC1	11	Home	Home	Home
DC2	12	Print	Print	F20
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Backfield/Back Tab
NAK	15	F12	Reserved	F21
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

* IBM 3191/92, 3471/72, 3196/97, 3476/77, Telex (all models)

Supported Interface Keys

ASCII	HEX	IBM, Memorex Telex (102)* Supported Keys	Memorex Telex (88)** Supported Keys
NUL	00	Reserved	Reserved
SOH	01	Enter	Enter
STX	02	F11	PF10
ETX	03	F12	PF11
EOT	04	F13	PF12
ENQ	05	F14	Reserved
ACK	06	F15	Reserved
BEL	07	New Line	New Line
BS	08	F16	Field Forward
HT	09	F17	Field Forward
LF	0A	F18	Reserved
VT	0B	Tab/Field Forward	Field Forward
FF	0C	Delete	Delete
CR	0D	Field Exit	New Line
SO	0E	Insert	Insert
SI	0F	Clear	Erase
DLE	10	Error Reset	Error Reset
DC1	11	Home	Reserved
DC2	12	Print	Print
DC3	13	Back Space	Back Space
DC4	14	Back Tab	Back Field
NAK	15	F19	Reserved
SYN	16	F1	PF1
ETB	17	F2	PF2
CAN	18	F3	PF3
EM	19	F4	PF4
SUB	1A	F5	PF5
ESC	1B	F6	PF6
FS	1C	F7	PF7
GS	1D	F8	PF8
RS	1E	F9	PF9
US	1F	F10	Home

* IBM 3196/97, 3476/77, 3191/92, 3471/72, Memorex Telex (all models) with 102 key keyboards
** Memorex Telex with 88 key keyboards

Supported Interface Keys

ASCII	HEX	Esprit 200, 400 ANSI Supported Keys	Esprit 200, 400 ASCII Supported Keys	Esprit 200, 400 PC Supported Keys
NUL	00	Reserved	Reserved	Reserved
SOH	01	New Line	New Line	New Line
STX	02	N/A	N/A	N/A
ETX	03	N/A	N/A	N/A
EOT	04	N/A	N/A	N/A
ENQ	05	N/A	N/A	N/A
ACK	06	N/A	N/A	N/A
BEL	07	New Line	New Line	New Line
BS	08	N/A	N/A	N/A
HT	09	Tab	Tab	Tab
LF	0A	N/A	N/A	N/A
VT	0B	Tab	Tab	Tab
FF	0C	N/A	N/A	Delete
CR	0D	New Line	New Line	New Line
SO	0E	N/A	N/A	Insert
SI	0F	Escape	Escape	Escape
DLE	10	F11	F11	F11
DC1	11	Insert	Insert	Home
DC2	12	F13	F13	Print
DC3	13	Back Space	Back Space	Back Space
DC4	14	Back Tab	Back Tab	Back Tab
NAK	15	F12	F12	F12
SYN	16	F1	F1	F1
ETB	17	F2	F2	F2
CAN	18	F3	F3	F3
EM	19	F4	F4	F4
SUB	1A	F5	F5	F5
ESC	1B	F6	F6	F6
FS	1C	F7	F7	F7
GS	1D	F8	F8	F8
RS	1E	F9	F9	F9
US	1F	F10	F10	F10

Supported Interface Keys

ASCII	HEX	Apple Mac/iMac Supported Keys
NUL	00	Reserved
SOH	01	Enter/Numpad Enter
STX	02	CAPS
ETX	03	ALT make
EOT	04	ALT break
ENQ	05	CNTRL make
ACK	06	CNTRL break
BEL	07	RETURN
BS	08	APPLE make
HT	09	TAB
LF	0A	APPLE break
VT	0B	TAB
FF	0C	Del
CR	0D	RETURN
SO	0E	Ins Help
SI	0F	ESC
DLE	10	F11
DC1	11	Home
DC2	12	Prnt Scrn
DC3	13	BACKSPACE
DC4	14	LSHIFT TAB
NAK	15	F12
SYN	16	F1
ETB	17	F2
CAN	18	F3
EM	19	F4
SUB	1A	F5
ESC	1B	F6
FS	1C	F7
GS	1D	F8
RS	1E	F9
US	1F	F10
DEL	7F	BACKSPACE

8 Utilities

To Add a Test Code I.D. Prefix to All Symbologies

This selection allows you to turn on transmission of a Code I.D. before the decoded symbology. (See the Symbology Chart, included in the Appendix A, page A-1) for the single character code that identifies each symbology.) This action first clears all current prefixes, then programs a Code I.D. prefix for all symbologies. This is a temporary setting that will be removed when the unit is reset. For instructions on how to reset your scanner, refer to Reset Scanner (page 8-1).

Add Code I.D. Prefix to
All Symbologies (Temporary)

Reset Scanner

Scanning the following bar code clears temporary settings in the scanner and returns scanner to normal operation. Scanning this bar code also causes the scanner to re-link with the base.

Reset Scanner

Show Software Revision

Scan the bar code below to output the current software revision, unit serial number, and other product information for both the scanner and base.

Show Revision

Show Data Format

Scan the bar code below to show current data format settings.

Data Format Settings

Scanner Report

Scan the bar code below to generate a report for the connected scanners. The report indicates the port, work group, scanner name, and address. To assign a name to your scanner, refer to "Menu Command Syntax" on page 10-1.

Scanner Report

Scanner Address

Scan the bar code below to determine the address of the scanner you are using.

Scanner Address

Base Address

Scan the bar code below to determine the address of the base you are using.

Base Address

Resetting the Standard Product Default Settings: Current Application Work Group

If you aren't sure what programming options are in your scanner, or you've changed some options and want the standard product default settings restored, scan the ***Standard Product Default Settings: Current Application Group*** bar code below.

The Menu Commands starting on page 10-6 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Note: Scanning this bar code also causes both the scanner and the base to perform a reset and become unlinked. Refer to "Scanner Modes" on page 1-6 for additional information.

Standard Product Default Settings:
Current Application Group

Resetting the Standard Product Default Settings: All Application Work Groups

The following bar code defaults all of the work groups to the factory settings.

Standard Product Default Settings:
All Application Groups

The Menu Commands starting on page 10-6 list the standard product default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Temporary Visual Menu 2003 Configuration

For quick download communication configuration, scan the **Visual Menu 2003** bar code to temporarily configure the scanner for Visual Menu 2003 settings. Refer to Visual Menu 2003 on page 9-1for additional information about Visual Menu 2003. After using Visual Menu, scan the Reset Scanner bar code on page 8-1.

Note: If you have a unit capable of keyboard wedge mode, scan the bar code below and the unit will communicate in RS-232 mode, allowing it to work with Visual Menu 2003. To convert the scanner back to keyboard wedge communication, cycle the power.

Visual Menu 2003

Note: If you download new software into a unit, the user-programmed parameters are retained. If you need to discard user-programmed settings, scan the Standard Product Default Settings bar code (see Resetting the Standard Product Default Settings: Current Application Work Group on page 8-2).

9 Visual Menu 2003

Visual Menu 2003 Introduction

Visual Menu 2003 provides the ability to configure a Hand Held Products scanning device by connecting the scanner to the com port of a PC. Visual Menu 2003 allows you to download updates to a scanner's firmware, change programmed parameters, and create and print programming bar codes. Using Visual Menu 2003, you can even set up the configuration for a scanner which is not attached to your PC. This enables one expert user to establish the configuration settings for all the devices your company uses, then save these configuration files for others. A configuration file can be e-mailed or, if you prefer, an expert user can create a bar code (or series of bar codes) that contains all the customized programming parameters, and mail or fax the bar code(s) to any location. Users in other locations can scan the bar code(s) to load in the customized parameters.

To communicate with an IT2020-5B, Visual Menu 2003 requires that the PC have at least one available serial communication port and an RS-232 cable to connect the port to the device. A power supply, which plugs into the IT2020-5B, is also required.

Note: IT5620/IT2020-5B works only with Visual Menu 2003 version 4.2 or later.

Visual Menu 2003 Operations

The Visual Menu 2003 program performs the following operations:

- Displays all configuration data, and saves the information to a file on your PC.
- Configures the device to meet your specific requirements. Visual Menu 2003 has all the programming parameters which are available via programming bar codes in this User's Guide.
- Creates and prints a clone bar code which contains the program and configuration data from one device. This bar code can then be used to program additional devices with the same parameters.
- Selects a device from a list, then performs offline or online file configuration for that device.

Installing Visual Menu 2003 from the Web

1. Use the following link to access the Developer's Area on our website: http://www.handheld.com/Site.aspx/na/en/developers/download_software/?product=34
2. Click on the entry for **Visual Menu 2003**.
3. When prompted, select **Save File**, and save the files to the **c:\windows\temp** directory.
4. Once you have finished downloading the file, exit the web site.
5. Using Explorer, go to the **c:\windows\temp** file.

6. Double click on the **Visual Menu 2003.exe** file. Follow the screen prompts to install the Visual Menu 2003 program.

7. To start Visual Menu 2003, from the Start Menu click on **Programs**, **Visual Menu 2003**, **Visual Menu 2003**.

10 Serial Programming Commands

The serial programming commands can be used in place of the programming bar codes. Both the serial commands and the programming bar codes will program the IT2020-5B. For complete descriptions and examples of each serial programming command, refer to the corresponding programming bar code in this manual.

The device must be set to an RS-232 interface (see page 1-21). The following commands can be sent via a PC com port using terminal emulation software.

Conventions

The following conventions are used for menu and query command descriptions:

parameter A label representing the actual value you should send as part of a command.

[*option*] An optional part of a command.

{Data} Alternatives in a command.

bold Names of menus, menu commands, buttons, dialog boxes, and windows that appear on the screen.

Menu Command Syntax

Menu commands have the following syntax (spaces have been used for clarity only):

Prefix [:Name:] Tag SubTag {Data} [, SubTag {Data}] [; Tag SubTag {Data}] […] Storage

Prefix — Three ASCII characters: **SYN M CR** (ASCII 22,77,13).

:Name: — To send information to the scanner (with the base connected to host): **:**IT5620**:** The default factory setting for an IT5620 scanner is IT5620. This setting is changed by using the BT_NAM command, which accepts alphanumeric values. If the name is not known, a wildcard (*) can be used :*:.

Note: Since the base stores all work group settings and transfers to them to scanner once they are linked, changes are typically done to the base and not to the scanner.

Tag — A 3 character case-insensitive field that identifies the desired menu command group. For example, all RS-232 configuration settings are identified with a Tag of **232**.

SubTag — A 3 character case-insensitive field that identifies the desired menu command within the tag group. For example, the SubTag for the RS-232 baud rate is **BAD**.

Data	The new value for a menu setting, identified by the Tag and SubTag.
Storage	A single character that specifies the storage table to which the command is applied. An exclamation point (**!**) performs the command's operation on the device's volatile menu configuration table. A period (**.**) performs the command's operation on the device's non-volatile menu configuration table. Use the non-volatile table only for semi-permanent changes you want saved through a power cycle.

Query Commands

Several special characters can be used to query the device about its settings.

^	What is the default value for the setting(s).
?	What is the device's current value for the setting(s).
*****	What is the range of possible values for the setting(s). (The device's response uses a dash (**-**) to indicate a continuous range of values. A pipe (**|**) separates items in a list of non-continuous values.)

:Name: Field Usage (Optional)

This command returns the query information from the scanner.

Tag Field Usage

When a query is used in place of a Tag field, the query applies to the *entire* set of commands available for the particular storage table indicated by the Storage field of the command. In this case, the SubTag and Data fields should not be used because they are ignored by the device.

SubTag Field Usage

When a query is used in place of a SubTag field, the query applies only to the subset of commands available that match the Tag field. In this case, the Data field should not be used because it is ignored by the device.

Data Field Usage

When a query is used in place of the Data field, the query applies only to the specific command identified by the Tag and SubTag fields.

Concatenation of Multiple Commands

Multiple commands can be issued within one Prefix/Storage sequence. Only the Tag, SubTag, and Data fields must be repeated for each command in the sequence. If additional commands are to be applied to the same Tag, then the new command sequence is separated with a comma (**,**) and only the SubTag and Data fields of the additional command are issued. If the additional command requires a different Tag field, the command is separated from previous commands by a semicolon (**;**).

Responses

The device responds to serial commands with one of three responses:

ACK Indicates a good command which has been processed.

ENQ Indicates an invalid Tag or SubTag command.

NAK Indicates the command was good, but the Data field entry was out of the allowable range for this Tag and SubTag combination, e.g., an entry for a minimum message length of 100 when the field will only accept 2 characters.

When responding, the device echoes back the command sequence with the status character inserted directly before each of the punctuation marks (the period, exclamation point, comma, or semicolon) in the command.

Examples of Query Commands

In the following examples, a bracketed notation [ ] depicts a non-displayable response.

Example #1:What is the range of possible values for Codabar Coding Enable?

Enter: cbrena*.

Response: CBRENA0-1[ACK]

This response indicates that Codabar Coding Enable (CBRENA) has a range of values from 0 to 1 (off and on).

Example #2: What is the default value for Codabar Coding Enable?

Enter: cbrena^.

Response: CBRENA1[ACK]

This response indicates that the default setting for Codabar Coding Enable (CBRENA) is 1, or on.

Example #3: What is the device's current setting for Codabar Coding Enable?

Enter: cbrena?.

Response: CBRENA1[ACK]

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on.

Example #4: What are the device's settings for all Codabar selections?

Enter: **cbr?.**

Response: **CBRENA1[ACK],**
SSX0[ACK],
CK20[ACK],
CCT1[ACK],
MIN2[ACK],
MAX60[ACK],
DFT[ACK].

This response indicates that the device's Codabar Coding Enable (CBRENA) is set to 1, or on;
the Start/Stop Character (SSX) is set to 0, or Don't Transmit;
the Check Character (CK2) is set to 0, or Not Required;
concatenation (CCT) is set to 1, or Enabled;
the Minimum Message Length (MIN) is set to 2 characters;
the Maximum Message Length (MAX) is set to 60 characters;
and the Default setting (DFT) has no value.

Trigger Commands

You can activate and deactivate the scanner with serial trigger commands. First, the scanner must be put in Manual/Serial Trigger Mode either by scanning the Manual/Serial Trigger Mode bar code (page 3-4), or by sending the Manual/Serial Menu Command (page 10-10). Once the scanner is in serial trigger mode, the trigger is activated and deactivated by sending the following commands:

Activate:**SYN T CR**

Deactivate:**SYN U CR**

The scanner scans until a bar code has been read, until the deactivate command is sent, or until the serial time-out has been reached (see Read Time-Out (Serial Trigger Mode) on page 3-4 for a description, and the serial command on page 10-10).

Resetting the Standard Product Default Settings: Current Application Work Group

If you aren't sure what programming options are in your scanner, or you've changed some options and want the standard product default settings restored, scan the ***Standard Product Default Settings: Current Application Group*** bar code below.

The Menu Commands starting on page 10-6 list the factory default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Note: Scanning this bar code also causes both the scanner and the base to perform a reset and become unlinked. Refer to "Linking Scanner to Base" on page 1-6 for additional information.

Standard Product Default Settings:
Current Application Group

*Note: If your scanner is in multiple scanner mode and you scan either the current or all application group default bar code, you will hear up to 30 seconds of beeping while all scanners are re-linked from the base and the settings are defaulted to * settings. The default interface is keyboard wedge and the default scanner mode is single scanner locked link mode.*

Resetting the Standard Product Default Settings: All Application Work Groups

The following bar code defaults all of the work groups to the factory settings.

Standard Product Default Settings:
All Application Groups

The Menu Commands starting on page 10-6 list the standard product default settings for each of the commands (indicated by an asterisk (*) on the programming pages).

Menu Commands

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Base Charge Mode	*Automatic	BASCHG1	1-5
	Full Charge Rate	BASCHG2	1-5
	Low Charge Rate	BASCHG3	1-5
	Battery Charge Off	BASCHG4	1-5
Scanner Modes - Single	Unlink Scanner	BT_RMV	1-6
	*Locked Link Mode	BASCON0,DNG1	1-7
	Open Link Mode	BASCON1,DNG1	1-7
	Override Locked Scanner	BT_RPL1	1-7
Multiple Scanner Operation	Multiple Scanner Operation	BASCON2,DNG3	1-8
Scanner Name	Scanner Name	BT_NAM	1-9
Scanner Report	Scanner Report	RPTSCN	1-10
Application Work Group Selections	*Group 0	GRPSEL0	1-11
	Group 1	GRPSEL1	1-11
	Group 2	GRPSEL2	1-11
	Group 3	GRPSEL3	1-11
	Group 4	GRPSEL4	1-11
	Group 5	GRPSEL5	1-11
	Group 6	GRPSEL6	1-11
Standard Product Defaults: Current Application Work Group	Default - Current Work Group	DEFALT	1-12
Standard Product Defaults: All Application Work Groups	Default - All Work Groups	PAPDFT	1-12
Non-Base Bluetooth Connection	Non-Base BT Connection	BT_DNG5	1-13
Bluetooth PIN Code	Bluetooth PIN	BT_PIN	1-13
Out-of-Range Alarm	Base Alarm Duration (Range 1 - 3000 sec (*0))	BASORD	1-13
	Scanner Alarm Duration (Range 1 - 3000 sec (*0))	BT_ORD	1-13

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Alarm Sound Type	Base Alarm Type	BASORW	1-14
	Scanner Alarm Type	BT_ORW	1-14
Data Accumulation Mode	On	BATENA1	1-14
	*Off	BATENA0	1-14
Factory Default Settings	Default	DEFALT	1-20
Terminal Interfaces			
Terminal ID	*003	TERMID###	2-2
Program Keyboard Country	*USA	KBDCTY0	2-4
	Belgium	KBDCTY1	2-4
	Denmark	KBDCTY8	2-4
	Finland	KBDCTY2	2-4
	France	KBDCTY3	2-4
	Germany/Austria	KBDCTY4	2-4
	Great Britain	KBDCTY7	2-4
	Italy	KBDCTY5	2-4
	Norway	KBDCTY9	2-4
	Spain	KBDCTY10	2-4
	Switzerland	KBDCTY6	2-4
Keyboard Style	*Regular	KBDSTY0	2-5
	Caps Lock	KBDSTY1	2-5
	Shift Lock	KBDSTY2	2-5
	Automatic Caps Lock	KBDSTY6	2-5
	Emulate External Keyboard	KBDSTY5	2-6
Keyboard Modifiers	*Control + ASCII Off	KBDCAS0	2-6
	Control + ASCII On	KBDCAS1	2-6
	*Turbo Mode Off	KBDTMD0	2-6
	Turbo Mode On	KBDTMD1	2-6
	*Numeric Keypad Off	KBDNPS0	2-6
	Numeric Keypad On	KBDNPS1	2-6
	*Auto Direct Conn. Off	KBDADC0	2-7
	Auto Direct Conn. On	KBDADC1	2-7
Serial Port Connection	RS-232	PAP232	2-8

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Baud Rate	300 BPS	232BAD0	2-8
	600 BPS	232BAD1	2-8
	1200 BPS	232BAD2	2-8
	2400 BPS	232BAD3	2-8
	4800 BPS	232BAD4	2-8
	9600 BPS	232BAD5	2-8
	19200 BPS	232BAD6	2-8
	38400 BPS	232BAD7	2-8
	57600 BPS	232BAD8	2-8
	*115200 BPS	232BAD9	2-8
Word Length: Data Bits, Stop Bits, and Parity	7 Data, 1 Stop, Parity Even	232WRD3	2-9
	7 Data, 1 Stop, Parity None	232WRD0	2-9
	7 Data, 1 Stop, Parity Odd	232WRD6	2-9
	7 Data, 2 Stop, Parity Even	232WRD4	2-9
	7 Data, 2 Stop, Parity None	232WRD1	2-9
	7 Data, 2 Stop, Parity Odd	232WRD7	2-9
	8 Data, 1 Stop, Parity Even	232WRD5	2-9
	*8 Data, 1 Stop, Parity None	232WRD2	2-9
	8 Data, 1 Stop, Parity Odd	232WRD8	2-9
RS-232 Handshaking	*RTS/CTS Off	232CTS0	2-10
	RTS/CTS On	232CTS2	2-10
	*XON/XOFF Off	232XON0	2-10
	XON/XOFF On	232XON1	2-10
	*ACK/NAK Off	232ACK0	2-10
	ACK/NAK On	232ACK1	2-10
Wand Emulation Connection	Same Code Format	TERMID64	2-13
	Code 39 Format	TERMID61	2-13

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Wand Emulation Transmission Rate	10	WNDSPD0	2-14
	*25	WNDSPD1	2-14
	40	WNDSPD2	2-14
	80	WNDSPD3	2-14
	120	WNDSPD4	2-14
	150	WNDSPD5	2-14
	200	WNDSPD6	2-14
Wand Emulation Polarity	*Black High	WNDPOL0	2-14
	White High	WNDPOL1	2-14
Wand Emulation Idle	Idle Low	WNDIDL0	2-15
	*Idle High	WNDIDL1	2-15
Wand Emulation Data Block Size	20	WNDBLK0	2-15
	*40	WNDBLK1	2-15
	60	WNDBLK2	2-15
	80	WNDBLK3	2-15
Wand Emulation Delay Between Blocks	5ms	WNDDLY0	2-15
	*50ms	WNDDLY1	2-15
	150ms	WNDDLY2	2-15
	500ms	WNDDLY3	2-15
Wand Emulation Overall Checksum	*Off	WNDCHK0	2-16
	On	WNDCHK1	2-16
Output Selections			
Beeper - Good Read	Off	BEPBEP0	3-1
	*On	BEPBEP1	3-1
Beeper Volume - Good Read	Off	BEPLVL0	3-1
	Low	BEPLVL1	3-1
	*Medium	BEPLVL2	3-1
	High	BEPLVL3	3-1
Beeper Pitch - Good Read (Frequency)	Low (1600) (min 400Hz)	BEPFQ11600	3-2
	*Medium (3250)	BEPFQ13250	3-2
	High (4200) (max 9000Hz)	BEPFQ14200	3-2

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Beeper Duration - Good Read	*Normal Beep	BEPBIP0	3-2
	Short Beep	BEPBIP1	3-2
LED - Good Read	Off	BEPLED0	3-2
	*On	BEPLED1	3-2
Number of Beeps - Good Read	*1	BEPRPT1	3-3
	Range 1 - 9	BEPRPT#	3-3
Good Read Delay	*No Delay	DLYGRD0	3-3
	Short Delay (500 ms)	DLYGRD500	3-3
	Medium Delay (1000 ms)	DLYGRD1000	3-3
	Long Delay (1500 ms)	DLYGRD1500	3-3
User-Specified Good Read Delay	Range 0 - 30,000 ms	DLYGRD#### #	3-3
Trigger Mode	*Manual Trigger	TRGMOD0	3-4
	Read Time-Out (0 - 300,000 ms) *300,000	TRGSTO####	3-4
	Scanner Power Time-Out Timer (0-7200 seconds) *3600	BT_LPT0	3-5
		BT_LPT200	3-5
		BT_LPT400	3-5
		BT_LPT900	3-5
		BT_LPT3600	3-5
		BT_LPT7200	3-5
	Automatic Trigger	TRGMOD1	3-5
	Presentation Mode	TRGMOD3	3-5
	Hands Free Time-Out (0-300,000 seconds) *5000	TRGPTO#### ##	3-6
Reread Delay	Short (500 ms)	DLYRRD500	3-6
	*Medium (750 ms)	DLYRRD750	3-6
	Long (1000 ms)	DLYRRD1000	3-6
	Extra Long (2000 ms)	DLYRRD3000	3-6
User-Specified Reread Delay	Range 0 - 30,000 ms	DLYRRD#### #	3-6

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Centering	Centering On	DECWIN1	3-7
	*Centering Off	DECWIN0	3-7
	Left of Centering Window *40	DECLFT###	3-7
	Right of Centering Window *60	DECRGT###	3-7
Output Sequence Editor	Enter Sequence	SEQBLK	3-9
	Default Sequence	SEQDFT	3-9
Require Output Sequence	Required	SEQ_EN2	3-10
	On/Not Required	SEQ_EN1	3-10
	*Off	SEQ_EN0	3-10
Multiple Symbols	On	SHOTGN1	3-12
	*Off	SHOTGN0	3-12
No Read	On	SHWNRD1	3-12
	*Off	SHWNRD0	3-12
Video Reverse	On	VIDREV1	3-12
	*Off	VIDREV0	3-12
Prefix/Suffix Selections			
Add CR Suffix to All Symbologies		VSUFCR	4-3
Prefix	Add Prefix	PREBK2##	4-3
	Clear One Prefix	PRECL2	4-3
	Clear All Prefixes	PRECA2	4-3
Suffix	Add Suffix	SUFBK2##	4-4
	Clear One Suffix	SUFCL2	4-4
	Clear All Suffixes	SUFCA2	4-4
Function Code Transmit	*Enable	RMVFNC0	4-4
	Disable	RMVFNC1	4-4
Intercharacter Delay		DLYCHR##	4-5
User Specified Intercharacter Delay	Delay Length	DLYCRX##	4-5
	Character to Trigger Delay	DLY_XX###	4-5
Interfunction Delay		DLYFNC##	4-6
Intermessage Delay		DLYMSG##	4-6

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Data Formatter Selections			
Data Format Editor	*Default Data Format (None)	DFMDF3	5-4
	Enter Data Format	DFMBK3##	5-4
	Clear One Data Format	DFMCL3	5-4
	Clear All Data Formats	DFMCA3	5-4
Data Formatter	Off	DFM_EN0	5-5
	*On, but Not Required	DFM_EN1	5-5
	On, Required	DFM_EN2	5-5
Alternate Data Formats	1	VSAF_1	5-5
	2	VSAF_2	5-5
	3	VSAF_3	5-5
Symbologies			
All Symbologies	All Symbologies Off	ALLENA0	6-1
	All Symbologies On	ALLENA1	6-1
Codabar	Default All Codabar Settings	CBRDFT	6-3
Codabar	Off	CBRENA0	6-3
	*On	CBRENA1	6-3
Codabar Start/Stop Char.	*Don't Transmit	CBRSSX0	6-3
	Transmit	CBRSSX1	6-3
Codabar Check Char.	*No Check Char.	CBRCK20	6-4
	Validate, But Don't Transmit	CBRCK21	6-4
	Validate, and Transmit	CBRCK22	6-4
Codabar Concatenation	*Off	CBRCCT0	6-4
	On	CBRCCT1	6-4
	Require	CBRCCT2	6-4
Codabar Message Length	Minimum (2 - 60) *4	CBRMIN##	6-5
	Maximum (2 - 60) *60	CBRMAX##	6-5
Code 39	Default All Code 39 Settings	C39DFT	6-5
Code 39	Off	C39ENA0	6-5
	*On	C39ENA1	6-5

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Code 39 Start/Stop Char.	*Don't Transmit	C39SSX0	6-5
	Transmit	C39SSX1	6-5
Code 39 Check Char.	*No Check Char.	C39CK20	6-6
	Validate, But Don't Transmit	C39CK21	6-6
	Validate, and Transmit	C39CK22	6-6
Code 39 Message Length	Minimum (0 - 48) *0	C39MIN##	6-6
	Maximum (0 - 48) *48	C39MAX##	6-6
Code 39 Append	*Off	C39APP0	6-7
	On	C39APP1	6-7
Code 32 Pharmaceutical (PARAF)	*Off	C39B320	6-8
	On	C39B321	6-8
Code 39 Full ASCII	*Off	C39ASC0	6-8
	On	C39ASC1	6-8
Interleaved 2 of 5	Default All Interleaved 2 of 5 Settings	I25DFT	6-9
Interleaved 2 of 5	Off	I25ENA0	6-9
	*On	I25ENA1	6-9
Interleaved 2 of 5 Check Digit	*No Check Char.	I25CK20	6-10
	Validate, But Don't Transmit	I25CK21	6-10
	Validate, and Transmit	I25CK22	6-10
Interleaved 2 of 5 Message Length	Minimum (2 - 80) *4	I25MIN##	6-10
	Maximum (2 - 80) *80	I25MAX##	6-10
Code 93	Default All Code 93 Settings	C93DFT	6-11
Code 93	Off	C93ENA0	6-11
	*On	C93ENA1	6-11
Code 93 Message Length	Minimum (0 - 80) *0	C93MIN##	6-11
	Maximum (0 - 80) *80	C93MAX##	6-11
Code 2 of 5	Default All Code 2 of 5 Settings	R25DFT	6-12
Code 2 of 5	*Off	R25ENA0	6-12
	On	R25ENA1	6-12

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Code 2 of 5 Message Length	Minimum (1 - 48) *4	R25MIN##	6-12
	Maximum (1 - 48) *48	R25MAX##	6-12
IATA Code 2 of 5	Default All IATA Code 2 of 5 Settings	A25DFT	6-13
IATA Code 2 of 5	*Off	A25ENA0	6-13
	On	A25ENA1	6-13
IATA Code 2 of 5 Message Length	Minimum (1 - 48) *4	A25MIN##	6-13
	Maximum (1 - 48) *48	A25MAX##	6-13
Matrix 2 of 5	Default All Matrix 2 of 5 Settings	X25DFT	6-13
Matrix 2 of 5	*Off	X25ENA0	6-13
	On	X25ENA1	6-13
Matrix 2 of 5 Message Length	Minimum (1 - 80) *4	X25MIN##	6-14
	Maximum (1 - 80) *80	X25MAX##	6-14
Code 11	Default All Code 11 Settings	C11DFT	6-14
Code 11	*Off	C11ENA0	6-14
	On	C11ENA1	6-14
Code 11 Check Digits Required	1 Check Digit	C11CK20	6-14
	*2 Check Digits	C11CK21	6-14
Code 11 Message Length	Minimum (1 - 80) *4	C11MIN##	6-15
	Maximum (1 - 80) *80	C11MAX##	6-15
Code 128	Default All Code 128 Settings	128DFT	6-15
Code 128	Off	128ENA0	6-16
	*On	128ENA1	6-15
ISBT Concatenation	On	ISBENA1	6-16
	*Off	ISBENA0	6-16
Code 128 Message Length	Minimum (0 - 80) *0	128MIN##	6-16
	Maximum (0 - 80) *80	128MAX##	6-16
Code 128 Code Page	Code 128 Code Page	128DCP	6-16
Code 128 Function Code Transmit	*Off	128FNX0	6-17
	On	128FNX1	6-17

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
ISBT Concatenation	*Off	ISBENA0	6-16
	On	ISBENA1	6-16
Telepen	Default All Telepen Settings	TELDFT	6-17
Telepen	*Off	TELENA0	6-17
	On	TELENA1	6-17
Telepen Output	*AIM Telepen Output	TELOLD0	6-17
	Original Telepen Output	TELOLD1	6-17
Telepen Message Length	Minimum (1 - 60) *1	TELMIN##	6-18
	Maximum (1 - 60) *60	TELMAX##	6-18
UPC A	Default All UPC A Settings	UPADFT	6-18
UPC A	Off	UPAENA0	6-18
	*On	UPAENA1	6-18
UPC A Check Digit	Off	UPACKX0	6-18
	*On	UPACKX1	6-18
UPC A Number System	Off	UPANSX0	6-19
	*On	UPANSX1	6-19
UPC A 2 Digit Addenda	*Off	UPAAD20	6-19
	On	UPAAD21	6-19
UPC A 5 Digit Addenda	*Off	UPAAD50	6-19
	On	UPAAD51	6-19
UPC A Addenda Required	*Not Required	UPAARQ0	6-19
	Required	UPAARQ1	6-19
UPC A Addenda Separator	Off	UPAADS0	6-20
	*On	UPAADS1	6-20
UPC E	Default All UPC E Settings	UPEDFT	6-21
UPC E0	Off	UPEEN00	6-21
	*On	UPEEN01	6-21
UPC E1	Off	UPEEN10	6-21
	*On	UPEEN11	6-21
UPC E Expand	*Off	UPEEXP0	6-21
	On	UPEEXP1	6-21

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
UPC E Check Digit	Off	UPECKX0	6-22
	*On	UPECKX1	6-22
UPC E Number System	Off	UPENSX0	6-22
	*On	UPENSX1	6-22
UPC E 2 Digit Addenda	*Off	UPEAD20	6-23
	On	UPEAD21	6-23
UPC E 5 Digit Addenda	*Off	UPEAD50	6-23
	On	UPEAD51	6-23
UPC E Addenda Required	*Not Required	UPEARQ0	6-21
	Required	UPEARQ1	6-21
UPC E Addenda Separator	Off	UPEADS0	6-22
	*On	UPEADS1	6-22
EAN/JAN 13	Default All EAN/ JAN 13 Settings	E13DFT	6-23
EAN/JAN 13	Off	E13ENA0	6-23
	*On	E13ENA1	6-23
EAN/JAN 13 Check Digit	Off	E13CKX0	6-23
	*On	E13CKX1	6-23
EAN/JAN 13 2 Digit Addenda	*Off	E13AD20	6-24
	On	E13AD21	6-24
EAN/JAN 13 5 Digit Addenda	*Off	E13AD50	6-24
	On	E13AD51	6-24
EAN/JAN 13 Addenda Required	*Not Required	E13ARQ0	6-24
	Required	E13ARQ1	6-24
EAN/JAN 13 Addenda Separator	Off	E13ADS0	6-24
	*On	E13ADS1	6-24
ISBN Translate	*Off	E13ISB0	6-25
	On	E13ISB1	6-25
EAN/JAN 8	Default All EAN/ JAN 8 Settings	EA8DFT	6-25
EAN/JAN 8	Off	EA8ENA0	6-25
	*On	EA8ENA1	6-25
EAN/JAN 8 Check Digit	Off	EA8CKX0	6-25
	*On	EA8CKX1	6-25

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
EAN/JAN 8 2 Digit Addenda	*Off	EA8AD20	6-26
	On	EA8AD21	6-26
EAN/JAN 8 5 Digit Addenda	*Off	EA8AD50	6-26
	On	EA8AD51	6-26
EAN/JAN 8 Addenda Required	*Not Required	EA8ARQ0	6-26
	Required	EA8ARQ1	6-26
EAN/JAN 8 Addenda Separator	Off	EA8ADS0	6-26
	*On	EA8ADS1	6-26
Coupon Code	Off	CPNENA0	6-26
	*On	CPNENA1	6-20
MSI	Default All MSI Settings	MSIDFT	6-27
MSI	*Off	MSIENA0	6-27
	On	MSIENA1	6-27
MSI Check Character	*Validate Type 10, but Don't Transmit	MSICHK0	6-27
	Validate Type 10 and Transmit	MSICHK1	6-27
MSI Message Length	Minimum (4 - 48) *4	MSIMIN##	6-28
	Maximum (4 - 48) *48	MSIMAX##	6-28
Plessey Code	Default All Plessey Settings	PLSDFT	6-28
Plessey Code	*Off	PLSENA0	6-28
	On	PLSENA1	6-28
Plessey Message Length	Minimum (4 - 48) *4	PLSMIN##	6-28
	Maximum (4 - 48) *48	PLSMAX##	6-28
RSS-14	Default All RSS-14 Settings	RSSDFT	6-29
RSS-14	Off	RSSENA0	6-29
	*On	RSSENA1	6-29
RSS Limited	Default All RSS-14 Limited Settings	RSLDFT	6-29
RSS Limited	Off	RSLENA0	6-29
	*On	RSLENA1	6-29
RSS Expanded	Default All RSS-14 Expanded Settings	RSEDFT	6-30

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
RSS Expanded	Off	RSEENA0	6-30
	*On	RSEENA1	6-30
RSS Expanded Msg. Length	Minimum (4 - 74) *4	RSEMIN##	6-30
	Maximum (4 - 74) *74	RSEMAX##	6-30
EAN•UCC Emulation	RSS Emulation	EANEMU2	6-31
	128 Emulation	EANEMU1	6-31
	*EAN•UCC Emulation Off	EANEMU0	6-31
China Post Code	Default All China Post Code Settings	CPCDFT	6-31
China Post Code	*Off	CPCENA0	6-31
	On	CPCENA1	6-31
China Post Code Msg. Length	Minimum (2 - 80) *4	CPCMIN##	6-31
	Maximum (2 - 80) *80	CPCMAX##	6-31
Korea Post Code	Default All Korea Post Code Settings	KPCDFT	6-32
Korea Post Code	*Off	KPCENA0	6-32
	On	KPCENA1	6-32
Korea Post Code Msg. Length	Minimum (2 - 80) *4	KPCMIN##	6-32
	Maximum (2 - 80) *48	KPCMAX##	6-32
PosiCode	Default All PosiCode Settings	POSDFT	6-32
PosiCode	Off	POSENA0	6-33
	*On	POSENA1	6-33
	A and B On	POSLIM0	6-33
	A and B and Limited A On	POSLIM1	6-33
	*A and B and Limited B On	POSLIM2	6-33
PosiCode Msg. Length	Minimum (2 - 80) *4	POSMIN##	6-33
	Maximum (2 - 80) *48	POSMAX##	6-33
Trioptic Code	*Off	TRIENA0	6-34
	On	TRIENA1	6-34
Codablock F	Default All Codablock F Settings	CBFDFT	6-34
Codablock F	*Off	CBFENA0	6-34
	On	CBFENA1	6-34

Selection	Setting ** Indicates default*	Serial Command *# Indicates a numeric entry*	Page
Codablock F Msg. Length	Minimum (1 - 2048) *1	CBFMIN####	6-34
	Maximum (1 - 2048) *2048	CBFMAX####	6-34
Code 16K	Default All Code 16K Settings	16KDFT	6-35
Code 16K	*Off	16KENA0	6-35
	On	16KENA1	6-35
Code 16K	Minimum (0 - 160) *1	16KMIN###	6-35
	Maximum (0 - 160) *160	16KMAX###	6-35
Code 49	Default All Code 49 Settings	C49DFT	6-35
Code 49	Off	C49ENA0	6-36
	*On	C49ENA1	6-36
Code 49	Minimum (1 - 81) *1	C49MIN##	6-36
	Maximum (1 - 81) *81	C49MAX##	6-36

11 Product Specifications

IMAGETEAM 5620 Product Specifications

Parameter	*Specification*
Dimensions (Typical):	
Height	6.2 inches (15.7 cm)
Length	5.3 inches (13.5 cm)
Width	3.2 inches (8.1 cm)
Weight (with battery)	9.2 ounces (260 g)
Light Source	630 nM visible red LED
Scan Rate	270 scans per second in most usages
Skew Angle	±65 degrees
Pitch Angle	±65 degrees
Horizontal Velocity	2 inches (5 cm) per second
Scan Contrast	20% minimum
Battery:	
Lithium Ion	3.6 Volt 1600 mAHr minimum
Battery Capacity:	Standby Heavy Usage (1 scan per second) 20 hours 12 hours
Storage:	5% loss per month
Temperature Ranges:	
Operating	32° F to +122° F (0° C to +50° C)
Battery Charge	41° F to +104° F (5° C to +40° C)
Storage	-40° F to +140° F (-40° C to +60° C)
Humidity	Up to 95% non-condensing
Mechanical Drop	Operational after 50 drops from 6 feet (1.8 m) to concrete
Vibration	Withstands 5G peak from 22 to 300 Hz
ESD Sensitivity	15 kV to any external surface
Sealant Rating	IP41

IMAGETEAM 2020-5B Product Specifications

Parameter	*Specification*	
Dimensions (Typical):		
Height	3.1 inches (7.9 cm)	
Length	5.6 inches (14.2 cm)	
Width	4.3 inches (10.9 cm)	
Weight	8.8 ounces (250 g)	
Voltage:		
DC Barrel	8.5 to 9.5 volts	
Host Port	4.5-14 volts	
Current Draw:	Base Only	Base/Scanner w/ max charging
5 Volt Host	125	125mA (will not charge)
9 Volt DC Barrel	100	850mA
12 Volt Host	100	825mA
Charge Rate 41° F to +104° F (5° C to +40° C)		
9 Volt DC Barrel (external power)	Maximum 4 hours full charge for fully discharged battery	
Temperature Ranges:		
Operating	32° F to +122° F (0° C to +50° C)	
Battery Charge	41° F to +104° F (5° C to +40° C)	
Storage	-40° F to +140° F (-40° C to +60° C)	
Humidity	Up to 95% non-condensing	
Mechanical Drop	Operational after 50 drops from 3.3 feet (1 m) to concrete	
Vibration	Withstands 5G peak from 22 to 300 Hz	
ESD Sensitivity	15 kV to any external surface	
Sealant Rating	IP41	

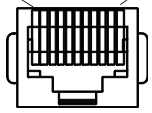
IMAGETEAM 5620 Depth of Field

Minimum Bar Width	*Maximum Near Field*	*Minimum Far Field (no ambient lighting)*
13 mil 100% UPC	1 in (2.5 cm)	24 in (61 cm)
7.5 mil Code 39	4 in (10 cm)	14 in (36 cm)
10 mil Code 39	2 in (5 cm)	18 in (46 cm)
13 mil Code 39	1 in (2.5 cm)	24 in (61 cm)
15 mil Code 39	1 in (2.5 cm)	28 in (71 cm)
20 mil Code 39	1 in (2.5 cm)	36 in (91 cm)
55 mil Code 39	4 in (10.2 cm)	44 in (112 cm)

Standard Cable Pinouts

Keyboard Wedge

10 Pin RJ41 Modular Plug
connects to the base



1
2 Cord shield
3 Tied to supply power
4 Supply ground
5 Terminal clock
6 Terminal data
7 Supply power input (Refer to tables on page 11-2.)
8 Keyboard data
9 Keyboard clock
10

Standard Cable Pinouts

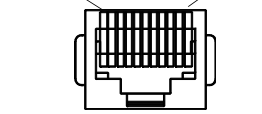
Wand Emulation

Standard Cable Pinouts

Serial Output

10 Pin RJ41 Modular Plug

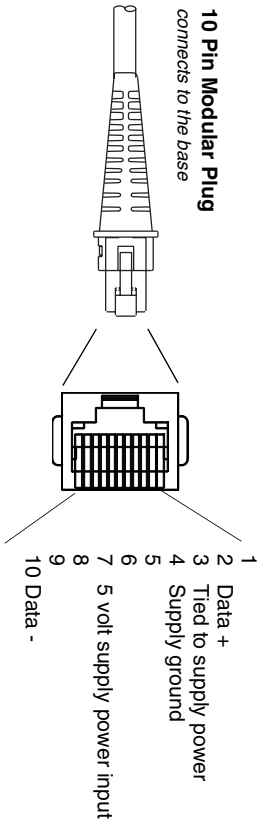
connects to the base



1
2 Cord shield
3 Prog 1 (Tied to supply power for primary cable)
4 Supply ground
5 Receive data - Serial data to scanner
6 Transmit data - Serial data from scanner
7 Supply power input (Refer to tables on page 11-2.)
8 Request to send data
9 Clear to send data
10

Standard Cable Pinouts

USB



12 Maintenance

Maintenance

Repairs and/or upgrades are not to be performed on this product. These services are to be performed only by an authorized service center. See "Customer Support" on page 13-1 for further information.

Cleaning the Scanner's Window

Reading performance may degrade if the scanner's window is not clean. If the window is visibly dirty, or if the scanner isn't operating well, clean the window with a soft cloth or lens tissue dampened with water (or a mild detergent-water solution or alcohol). If a detergent solution is used, rinse with a clean lens tissue dampened with water only.

The base and scanner's housing may also be cleaned the same way.

⚠ Caution:

Do not submerge the scanner in water. The scanner's housing is not watertight.

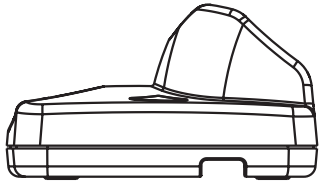
Do not use abrasive wipes or tissues on the scanner's window – abrasive wipes may scratch the window. Never use solvents (e.g., alcohol or acetone) on the housing or window – solvents may damage the finish or the window.

Inspecting Cords and Connectors

Inspect the base's interface cable and connector for wear or other signs of damage. A badly worn cable or damaged connector may interfere with scanner operation. Contact your Hand Held Products distributor for information about cable replacement. Cable replacement instructions are on page 12-2.

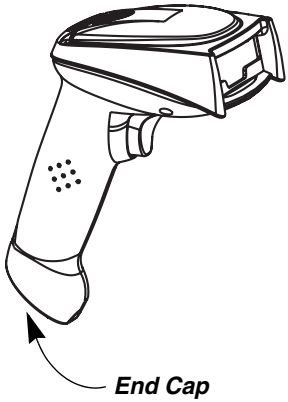
Replacing the IT2020-5B Interface Cable:

1. Turn the power to the host system OFF.
2. Disconnect the base's cable from the terminal or computer.
3. Turn the base upside down.
4. Pull the connector out while maintaining pressure on the connector release clip.
5. Replace with the new cable. Insert the connector into the opening and press firmly. The connector is keyed to go in only one way, and will click into place.



Changing the IT5620 Battery:

1. Remove the screw on the end cap.
2. Remove the battery from the handle.
3. Insert battery.
4. Replace end cap and screw.



Troubleshooting Base

Note: Please visit the Services and Support section of our website (www.handheld.com) to check for the latest software for both the scanner and the base.

If your base is not functioning properly, review the following troubleshooting guidelines to try to isolate the problem.

Is the red LED on?

If the red LED isn't illuminated, check that:

- The power cable is connected properly and there is power at the power source.
- The host system power is on (if external power isn't used).

Is the green LED on?

If the *green* LED isn't illuminated, check that:

- The scanner is correctly placed in the base.
- There is external power or 12 volt host power.
- Charge mode is turned on. (See "Base Charge Mode" on page 1-5)
- The battery is not bad or deeply discharged. In some cases, the scanner's battery may trickle charge to bring it into an acceptable level and then transition to a normal charge cycle.

Troubleshooting Scanner

Note: Make sure that your scanner's battery is charged.

Note: Please visit the Services and Support section of our website (www.handheld.com) to check for the latest software for both the scanner and the base.

Is the scanner having trouble reading your symbols?

If the scanner isn't reading symbols well, check that the symbols:

- Aren't smeared, rough, scratched, or exhibiting voids.
- Aren't coated with frost or water droplets on the surface.
- Are enabled in the base to which the scanner connects.

Is the bar code displayed but not entered into the application?

The bar code is displayed on the host device correctly, but you still have to press a key to enter it (the Enter/Return key or the Tab key, for example).

You need to program a suffix. Programming a suffix enables the scanner to output the bar code data plus the key you need (such as "CR") to enter the data into your application. Refer to Prefix/Suffix Overview on page 4-1 for further information.

Does the scanner read the bar code incorrectly?

If the scanner reads a bar code, but the data is not displayed correctly on the host screen:

- The base may not be programmed for the appropriate terminal interface. For example, you scan "12345" and the host displays "@es%."

  Reprogram the base with the correct Plug and Play or Terminal selection bar code. See Chapter 1 and Chapter 2.
- The base may not be programmed to output your bar code data properly. For example, you scan "12345" and the host displays "A12345B."

  Reprogram the base with the proper symbology selections. See Chapter 6.

The scanner won't read your bar code at all.

1. Scan the sample bar codes in the back of this manual. If the scanner reads the sample bar codes, check that your bar code is readable. Verify that your bar code symbology is enabled (see Chapter 6).

2. If the scanner still can't read the sample bar codes, scan All Symbologies on page 6-1.

If you aren't sure what programming options have been set in the base, or if you want the factory default settings restored, scan Resetting the Standard Product Default Settings: Current Application Work Group on page 10-5.

Troubleshooting the Cordless System

The scanner must be linked to the base for the system to work properly. See "Linking Scanner to Base" on page 1-6.

13 Customer Support

Product Service and Repair

Hand Held Products provides service for all its products through service centers throughout the world. To obtain warranty or non-warranty service, return the unit to Hand Held Products (postage paid) with a copy of the dated purchase record attached. Contact the appropriate location below to obtain a Return Material Authorization number (RMA #) before returning the product.

North America

Hand Held Products Corporate Offices
Telephone: (800) 782-4263, Option 3
Fax: (704) 566-6015
E-mail: naservice@handheld.com

America Latina

Hand Held Products America Latina
Teléfono: (239) 263-7600
Fax: (239) 263-9689
E-mail: laservice@handheld.com

Brazil

Hand Held Products Brazil
Telephone: +55 (21) 2176-0250
Fax: +55 (21) 2176-0249
E-mail: suporte@handheld.com

Europe, Middle East, and Africa

Hand Held Products Europe
Telephone:+ 31 (0) 40 29 01 633
Fax: + 31 (0) 40 2901631
E-mail: euservice@handheld.com

Asia Pacific

Hand Held Products Asia/Pacific
Telephone: +852-2511-3050
Fax: +852-2511-3557
E-mail: apservice@handheld.com

Japan

Hand Held Products Japan
Telephone: +81-3-5770-6312
Fax: +81-3-5770-6313
E-mail: apservice@handheld.com

Online Product Service and Repair Assistance

You can also access product service and repair assistance online at www.handheld.com.

Technical Assistance

If you need assistance installing or troubleshooting your scanner, please call your Distributor or the nearest Hand Held Products technical support office:

North America/Canada:

Telephone: (800) 782-4263, option 4 (8 a.m. to 6 p.m. EST)

Fax number: (315) 685-4960

E-mail: *natechsupport@handheld.com*

Europe, Middle East, and Africa:

Telephone-
European Ofc:Int+31 (0) 40 29 01 600

U.K. Ofc:Int+44 1925 240055
E-mail:eutechsupport@handheld.com

Asia Pacific:
Telephone:Int+852-3188-3485 *or* 2511-3050
E-mail:aptechsupport@handheld.com

America Latina:
Teléfono: (704) 998-3998, opción 8
E-mail:latechsupport@handheld.com

Online Technical Assistance

You can also access technical assistance online at www.handheld.com.

Limited Warranty

Hand Held Products, Inc. ("Hand Held Products") warrants its products to be free from defects in materials and workmanship and to conform to Hand Held Products published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any Hand Held Products product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than Hand Held Products or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by Hand Held Products for the product at the time of purchase ("Warranty Period"). Any defective product must be returned (at purchaser's expense) during the Warranty Period to Hand Held Products factory or authorized service center for inspection. No product will be accepted by Hand Held Products without a Return Materials Authorization, which may be obtained by contacting Hand Held Products. In the event that the product is returned to Hand Held Products or its authorized service center within the Warranty Period and Hand Held Products determines to its satisfaction that the product is defective due to defects in materials or workmanship, Hand Held Products, at its sole option, will either repair or replace the product without charge, except for return shipping to Hand Held Products.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

HAND HELD PRODUCTS' RESPONSIBILITY AND PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT. IN NO EVENT SHALL HAND HELD PRODUCTS BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, AND, IN NO EVENT, SHALL ANY LIABILITY OF HAND HELD PRODUCTS ARISING IN CONNECTION WITH ANY PRODUCT SOLD HEREUNDER (WHETHER SUCH LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT, OR OTHERWISE) EXCEED THE ACTUAL AMOUNT PAID TO HAND HELD PRODUCTS FOR THE PRODUCT. THESE LIMITATIONS ON LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT EVEN WHEN HAND HELD PRODUCTS MAY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH INJURIES, LOSSES, OR DAMAGES. SOME STATES, PROVINCES, OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

All provisions of this Limited Warranty are separate and severable, which means that if any provision is held invalid and unenforceable, such determination shall not affect the validity of enforceability of the other provisions hereof. Use of any peripherals not manufactured/sold by Hand Held Products voids the warranty. This includes but is not limited to: cables, power supplies, cradles, and docking stations. Hand Held Products, Inc. extends these warranties only to the first end-users of the products. These warranties are nontransferable.

The limited duration of the warranty for the IT2020-5B and IT5620 is for three (3) years. The limited duration of the warranty for the scanner battery is for one (1) year.

Appendix A

Symbology Chart

Symbology	Code ID	AIM ID	Hex ID	Symbology	Code ID	AIM ID	Hex ID
China Post	Q	]X0	51	Korea Post	?	]X0	3F
Codabar	a	]F*m*	61	Matrix 2 of 5	m	]X0	6D
Codablock F	q	]O*m*	71	MSI	g	]M*m*	67
Code 11	h	]H*m*	68	No Read			9C
Code 16K	o	]K*m*	6F	Plessey Code	n	]P0	6E
Code 39	b	]A*m*	62	PosiCode	W	]p*m*	57
Code 32 Pharma-ceutical (PARAF)	<	]X0	3C	Reduced Space Symbology (RSS-14, RSS Limited, RSS Expanded)	y	]e*m*	79
Code 49	l	]T*m*	6C	Straight 2 of 5 IATA(2-bar start/ stop) Straight 2 of 5 Industrial (3-bar start/stop)	f	]R*m*]S0	66
Code 93	i	]G*m*	69	Telepen	t	]B*m*	74
Code 128	j	]C*m*	6A	Trioptic Code	=	]X0	3D
UCC/EAN-128	l	]C1	49	UPC-A	c	]E0	63
EAN/JAN-8	D	]E4	44	UPC-A with Extended Coupon Code	c	]E3	63
EAN/JAN-13	d	]E0	64	UPC-E	E	]E0	45
EAN-13 with Extended Coupon Code	d	]E3	64	*All Symbologies*			*99*
Interleaved 2 of 5	e	]I*m*	65				

Note: "m" represents the AIM modifier character. Refer to International Technical Specification, Symbology Identifiers, for AIM modifier character details.

Note: Prefix/Suffix entries for specific symbologies override the universal (All Symbologies, 99) entry.

Refer to *Data Editing* beginning on page 4-1 and *Data Formatting* beginning on page 5-1 for information about using Code ID and AIM ID.

ASCII Conversion Chart (Code Page 1252)

Note: This table applies to U.S. style keyboards. Certain characters may differ depending on your Country Code/PC regional settings.

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20		64	40	@	96	60	‘
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	“	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	‘	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	

Dec.	Hex	Char	Dec.	Hex	Char	Dec.	Hex	Char	Dec.	Hex	Char
128	80	€	160	A0		192	C0	À	224	E0	à
129	81	□	161	A1	¡	193	C1	Á	225	E1	á
130	82	‚	162	A2	¢	194	C2	Â	226	E2	â
131	83	*ƒ*	163	A3	£	195	C3	Ã	227	E3	ã
132	84	„	164	A4	¤	196	C4	Ä	228	E4	ä
133	85	…	165	A5	¥	197	C5	Å	229	E5	å
134	86	†	166	A6	¦	198	C6	Æ	230	E6	æ
135	87	‡	167	A7	§	199	C7	Ç	231	E7	ç
136	88	ˆ	168	A8	¨	200	C8	È	232	E8	è
137	89	‰	169	A9	©	201	C9	É	233	E9	é
138	8A	Š	170	AA	ª	202	CA	Ê	234	EA	ê
139	8B	‹	171	AB	«	203	CB	Ë	235	EB	ë
140	8C	Œ	172	AC	¬	204	CC	Ì	236	EC	ì
141	8D	□	173	AD	-	205	CD	Í	237	ED	í
142	8E	Ž	174	AE	®	206	CE	Î	238	EE	î
143	8F	□	175	AF	¯	207	CF	Ï	239	EF	ï
144	90	□	176	B0	°	208	D0	Ð	240	F0	ð
145	91	‘	177	B1	±	209	D1	Ñ	241	F1	ñ
146	92	’	178	B2	²	210	D2	Ò	242	F2	ò
147	93	“	179	B3	³	211	D3	Ó	243	F3	ó
148	94	”	180	B4	´	212	D4	Ô	244	F4	ô
149	95	•	181	B5	µ	213	D5	Õ	245	F5	õ
150	96	–	182	B6	¶	214	D6	Ö	246	F6	ö
151	97	—	183	B7	·	215	D7	×	247	F7	÷
152	98	˜	184	B8	¸	216	D8	Ø	248	F8	ø
153	99	™	185	B9	¹	217	D9	Ù	249	F9	ù
154	9A	š	186	BA	º	218	DA	Ú	250	FA	ú
155	9B	›	187	BB	»	219	DB	Û	251	FB	û
156	9C	œ	188	BC	¼	220	DC	Ü	252	FC	ü
157	9D	□	189	BD	½	221	DD	Ý	253	FD	ý
158	9E	ž	190	BE	¾	222	DE	Þ	254	FE	þ
159	9F	Ÿ	191	BF	¿	223	DF	ß	255	FF	ÿ

Code Page Mapping of Printed Bar Codes

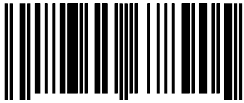
Code pages define the mapping of character codes to characters. If the data received does not display with the proper characters, it may be because the bar code being scanned was created using a code page that is different from the one the host program is expecting. If this is the case, select the code page with which the bar codes were created. The data characters should then appear properly.

Note: The Code Page option is available for Code 39, Code 93, and Code 128.

Code Page	Standard	Description
1	CP ISO646	
2 (Default)	ISO 2022	Automatic National Replacement Characters
3	CP Binary	
82	ISO 2022 11 Swe	Swedish Replacement Characters
83	ISO 2022 69 Fra	French/Belgium Replacement Characters
81	ISO 2022 25 Fra	French/Belgium Replacement Characters
84	ISO 2022 11 Ger	German Replacement Characters
85	ISO 2022 11 Ita	Italian Replacement Characters
86	ISO 2022 11 Swi	Swiss Replacement Characters
87	ISO 2022 11 UK	British Replacement Characters
88	ISO 2022 11 Dan	Danish Replacement Characters
89	ISO 2022 11 Nor	Norwegian Replacement Characters
90	ISO 2022 11 Spa	Spanish Replacement Characters

Sample Symbols

UPC A



0 123456 7890

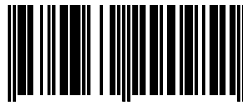
Interleaved 2 of 5

1234567890

Code 128

Code 128

EAN 13

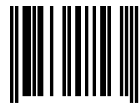


9 780330 290951

EAN 8

654 3210 5

UPC-E



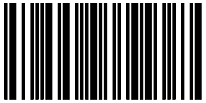
0 456123 8

Sample Symbols

Code 39

BC321

Codabar

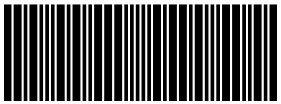


A13579B

Code 93

123456-9$

Code 2 of 5



123456

Matrix 2 of 5

6543210

RSS-14

(01)00123456789012

Programming Chart

0

1

2

3

4

5

6

7

8

9

A

B

C

D

E

F

Discard

Save

Note: *If you make an error while scanning the letters or digits (before scanning Save), scan Discard, scan the correct letters or digits, and* ***Save****.*

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700 Visions Drive
P.O. Box 208
Skaneateles Falls, NY 13153-0208

5620B-SM Rev A
4/05